Policy Research
WORKING PAPERS
Transition and Macro-Adjustment

Country Economics Department
The World Bank
October 1992
WPS 1000

WPS1000

REVISED

World Bank Adjustment Lending and Economic Performance in Sub-Saharan Africa in the 1980s

A Comparison with Other Low-Income Countries

Ibrahim A. Elbadawi
Dhaneshwar Ghura
and
Gilbert Uwujaren

Adjustment programs cannot succeed in Sub-Saharan African countries unless governments play a greater, albeit redefined, role in adjustment: where there is more public investment in infrastructure, human capital, and agricultural technology in order to generate a supply response; policy reform is made credible to the private sector; program implementation improves; and there is better "governance" and more political stability.

Policy Research

WORKING PAPERS

Transition and Macro-Adjustment

WPS 1000

This paper — a product of the Transition and Macro-Adjustment Division, Country Economics Department, and the Economics and Finance Division, Africa Technical Department — is part of a joint research effort by CECTM and AFTEF on "The Effectiveness of Adjustment Lending in Sub-Saharan Africa." Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Ana Maranon, room N11-025, extension 39074 (October 1992, 96 pages).

Elbadawi, Ghura, and Uwujaren investigated the factors that influenced the participation of Sub-Saharan African countries and all low-income countries in World Bank adjustment lending. They estimated how the Bank's adjustment programs affected economic performance in both regions.

They found that the marginal contribution of Bank-supported adjustment programs to export performance has been positive and significant in Sub-Saharan Africa, given the potentially important links between export growth and economic growth

But adjustment programs have not significantly affected economic growth in Sub-Saharan Africa and have had a deleterious effect on investment there. This strengthens the argument of those who call for more explicit consideration of the initial conditions of the Sub-Saharan African economies in the design, emphasis, and schedule of their adjustment programs.

For one thing, a redefined but more important role for governments is in order for reforming African economies. Fiscal and monetary retrenchment are still indispensable, but it is critical that there be more public investment in infrastructure, human capital, and agricultural technology — to generate a supply response.

Moreover, efforts must be made to make policy reforms more credible to the private sector and to improve program implementation.

Also, "governance" and political stability — politically sensitive issues — critically affect the adoption, implementation, sustainability, and credibility of adjustment programs.

Produced by the Policy Research Dissemination Center

World Bank Adjustment Lending and Economic Performance in Sub-Saharan Africa in the 1980s

A Comparison with Other Low-Income Countries

by
Ibrahim A. Elbadawi, Dhaneshwar Ghura, and Gilbert Uwujaren*

* The authors are respectively with the World Bank, Country Economics Department, Transition and Macro-Adjustment Division; North Carolina State University, Department of Economics; and the World Bank, Africa Technical Department, Economics and Finance Division. The authors would like to acknowledge the excellent research assistance provided by Ayda Kimemia. They are grateful to the Africa Region of the World Bank and to Gerry Helleiner for helpful comments on an earlier draft.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. SUMMARY AND CONCLUSIONS

Following rapid deterioration in the macroeconomic and sectoral performance in Sub-Saharan Africa (SSA) since the mid-1970s, reaching crisis proportions in the early 1980s, many countries in the region started comprehensive World Bank (and IMF) adjustment lending programs. Most of these countries started the adjustment process from a position of (i) low and declining real income, (ii) sluggish or deteriorating growth rates; (iii) mounting external debt and debt service, (iv) very low saving and investment to GDP ratios, (v) declining external competitiveness and growth in export volumes, (vi) mounting current account deficits (without compensating foreign capital inflows) and (vii) rapidly declining agricultural output per capita.

Also, many countries started the adjustment process with highly overvalued real exchange rates, a condition resulting from many years of inflationary policies, inward-oriented trade strategies, and policies which encouraged excessive capital inflows. Furthermore, in the period prior to the start of adjustment programs, many countries were experiencing widespread inefficiencies in resource use due to import restrictions (import quotas and tariffs), high commodity export taxes, administered interest rates and foreign exchange controls. Inappropriate policies which resulted in relative price distortions in most of the key sectors adversely affected economic incentives and production. These price distortions combined with the severe external shocks of the late 1970s and early 1980s (declining terms of trade, drying up of foreign capital inflows and rising world interest rates), considerably weakened many economies of SSA in the early 1980s.

There is very little disagreement regarding the severity of the economic crisis facing most African countries. However, there is considerable controversy regarding the causes of such poor economic performance. One school of thought blames forces beyond the control of economic policy makers in the region for the poor performance. Adverse terms-of-trade shocks, limited access to foreign credit, declining demand for African commodities, and severe droughts are cited as contributing to the slow growth. However, both faster growth of low-income countries in other regions (e.g., South Asia) that have faced similar external conditions as SSA and better performance in SSA in earlier periods (with similar external shocks) have led another school of thought to focus on the contribution of domestic policies to economic problems in the region.

What make the economies of SSA particularly vulnerable to exogenous shocks and natural disasters are the peculiar conditions prevailing in SSA -- including the rudimentary nature of its infrastructure, its limited technological base, and the structural disarticulation of its economies with domestic production almost totally dependent on imported capital and intermediate goods, while the main source of foreign exchange remains a handful of primary exports most of which are agricultural and produced under increasingly distressed environmental conditions. These considerations motivated

some scholars to argue that what is required for SSA is a development strategy that has a balanced emphasis on both demand management and economic restructuring, that emphasizes longer term horizon, ensures steady flow of much needed capital and fosters stability and sustainability. The proponents of this strategy (e.g. Helleiner (1990)) argue that this is the appropriate strategy for SSA even if it should entail some marginal deviations from efficiency pricing or equilibrium real exchange rates. There is a wide agreement, however, that policies leading to unstable macroeconomic environment, elaborate controls, and substantially sub-optimal incentive structure are harmful to growth. Subject to the above caveats -- which are quite relevant for the case of SSA, the ultimate proposition that "nations control their own economic destiny" (Summers (1992)) remains valid in SSA as is everywhere.

Programs of structural adjustment lending (SAL) and sectoral adjustment lending (SECAL) were introduced in the early 1980s in SSA in order to help countries in the region minimize the initial costs of stabilization while implementing economic policy and institutional reforms. The policy prescriptions in SALs and SECALs strongly emphasize the adoption of outward-oriented development strategies as the primary channel for eliminating balance of payments and debt problems. Nominal devaluations, macroeconomic retrenchment and reforms in foreign trade and institutions are the main vehicles for eliminating overvaluations in the real exchange rates and creating a structure of incentives consistent with this strategy. Adjustment loans to SSA have accounted for a large proportion of World Bank adjustment loans -- of the 183 SALs and SECALs as of 1989, SSA accounted for 84.

The aims of this study were to investigate the factors influencing participation in World Bank adjustment lending in SSA and all low income countries (LICs) and to estimate the contribution of World Bank adjustment programs on economic performance in these two regions. Each of the two groups of countries (SSA and LICs) was divided into three categories: the early intensive adjustment lending (EIAL) countries were those that received two or more SALs or three adjustment loans (SALs or SECALs) before 1986; the other adjustment lending (OAL) countries were those that started adjustment after 1985 or received fewer than two SALs or three adjustment loans prior to 1985; and the countries that did not receive adjustment lendings between 1980 and 1988 (NAL). In the analysis the latter two groups were defined as non-adjustors. Three periods were used for the evaluations of conditions prior to the decision to participate in adjustment programs and for the analysis of the effectiveness of programs on economic performance -- 1970-80; 1981-84; and 1985-89.[1]

---

[1] Only two low-income countries outside SSA were included in the category EAIL LICs. Hence, in effect, an assessment of the effectiveness of adjustment in the EAIL LICs essentially provides an assessment for the EAIL countries from SSA.

At the outset we hasten to point out that while this classification process is based on a rather objective criterion and therefore avoids subjective judgment, it does not, however, account for actual implementation of the programs. Strictly speaking, therefore, the above classification allows for testing the effectiveness of Bank-assisted adjustment lending rather than testing the effectiveness of the program themselves. To be able to do this the current classification should be augmented with a somewhat 'subjective' but informed criterion specifying the degree of program implementation. While this should be an important future extension of the research[2]; in this study, however, we will assume that the present 'objective' classification criteria are adequate for 'approximately' assessing the effectiveness of the adjustment programs.

An evaluation of the initial conditions in the period 1970-80 revealed that Sub-Saharan countries in the categories EAIL and OAL had pursued more expansive macroeconomic policies than the NAL countries. The countries in these two groups experienced higher inflation rates than NAL countries. Also, the EAIL and OAL countries had higher debt burdens than NAL countries. In addition, in the period 1970-80, the NAL countries outperformed the EAIL and OAL countries in terms of real economic growth despite comparable investment ratios across these three groups of countries. Hence, it is clear that the group of countries that undertook Bank-assisted adjustment (compared with the NAL countries) entered the 1980s with relatively weaker economies. In the period 1981-84 (compared to 1970-80), both the real GDP growth and the investment ratio of the EAIL and NAL countries deteriorated and the growth rate for the OAL countries stagnated

A probit analysis of factors influencing the decision to participate in adjustment programs point to the importance of the macroeconomic policies, economic performance, and political stability in the period preceding adjustment. However, the extent of the external shocks do not seem to matter in making such a decision. The results show a very strong positive relationship between political stability (in the period prior to the start of intensive adjustment, 1981-84) and the decision of countries in SSA to participate in adjustment programs. Hence, countries (such as Mauritius, Senegal, Cote d'Ivoire, Kenya, Nigeria and so on) which were relatively more stable politically in the period 1981-84 (than countries such as Burundi, Central African Republic, Congo, Mali, Niger, Somalia, Zaire, Benin, Cameroon, Ethiopia and so on) were more inclined to start the adjustment process early and to undertake strong and bold adjustment measures. This result has two important implications. First, political stability is important to the recognition of the need for adjustment. Second, an increase in political instability can potentially jeopardize the sustainability of adjustment programs. Other factors (in the period prior to the start of intensive adjustment) which were

---

[2] This will be one of the major methodological extensions in a forthcoming Bank study on Adjustment in Sub-Saharan Africa (Jones (1992)).

important in inducing countries in SSA to participate in adjustment lending programs were the (i) the growth performance, (ii) investment to GDP ratio, and (iii) foreign debt burden.

Virtually similar results were obtained for all low income countries which participated in World Bank adjustment lending. In addition, for these countries, a rise in inflation (in the period prior to the start of intensive adjustment) was an important factor leading to the decision to participate in adjustment lending. However, neither for countries in SSA nor for all low-income countries was there any significant association between external shocks and the decision to participate in adjustment lending programs. These last two results indicate that the pre-reform macroeconomic stability (reflected in the degree of inflation) is an important factor leading countries to participate in adjustment lending programs. However, the change in external shocks is not important in this decision -- at least in a direct sense.

Another aim of the study was to investigate the contribution of World Bank adjustment lending to five indicators of performance: export to GDP ratio; growth in real GDP; gross domestic investment to GDP ratio; saving to GDP ratio; and inflation. The adjustment period was defined as 1985-89 and the pre-adjustment period as 1981-84. The change in the indicators of performance between these two periods were considered. A comparison of the means of economic performance indicators for EIAL countries between the periods 1981-84 and 1985-89 (periods before and after World Bank adjustment programs were started) revealed improvements in real GDP growth, export to GDP ratio and saving to GDP ratio, and a fall in inflation.[3] Real GDP growth rose from 0.1 percent to 3.7 percent. Export to GDP ratio rose from 27.7 percent to 29.6 percent. Saving to GDP ratio rose from 9.9 percent to 11 percent. Inflation fell from 21 percent to 15 percent. However, real GDP growth, investment to GDP ratio and export to GDP ratio fell in both the OAL and NAL countries. NAL countries experienced a substantial increase in saving to GDP ratio and a large fall in inflation.

However, the comparison of economic indicators before and after adjustment programs were started does not give an accurate picture of the true contribution of these programs. Hence, an econometric methodology was used to separate out the contribution of World Bank adjustment programs. The modified-control-group statistical framework was used for the analysis. This method of analysis is capable of identifying the 'marginal' (incremental) contribution of World Bank adjustment lending on economic performance after (i) accounting for the potential endogeneity of the decision to participate in adjustment programs, (ii) controlling for factors unrelated to programs which could also affect performance, and (iii) incorporating the performance of countries which did not

---

[3] These findings are in line with those of another World Bank study using a similar methodology for EIAL SPA (Special Project for Africa) countries (World Bank 1991a).

undergo adjustment but which faced more-or-less similar external shocks as those that did participate in adjustment (to obtain a counterfactual of what could have happened in the absence of programs).

In the case of countries in SSA there is strong indication that World Bank adjustment programs have contributed to improving exports in a significant way. This result is not surprising given that most of the countries concerned took strong and bold policy actions to implement policy changes in their exchange rates and trade sectors. The rate of implementation of trade-related or exchange rate policies in SSA was high compared to other policy areas. The success of adjustment programs depend to a large extent on the credibility of such programs. Strong, bold and sustained policy and institutional reforms not only improve incentives in the tradables sector but also enhance the credibility of programs.

However, World Bank adjustment lending has not significantly affected economic growth[4] and has contributed to a statistically significant drop in investment ratio. Two implications follow from these two results combined. First, any increase in the efficiency of investment generated by reform programs has not been sufficient to counterbalance the ensuing decline in investment and to restore economic growth. Part of the decline in investment may have been caused by the slowdown of the large-scale government investment programs in face of retrenchment. Second, more attention should be given to private sector perception about the credibility of reforms and hence to its likely response to policy reforms (designed to enhance private sector investment). Also, adjustment lending programs did not significantly affect inflation or saving to GDP ratio.

There are several reasons for the lack of full desirable impact of adjustment programs on all indicators of performance. First, after years of distortions in relative prices, it takes time for factors of production to identify more productive opportunities and to ultimately make the shift. Second, SSA has had below average success with the implementation of conditions in adjustment programs (than countries in other regions). The lack of full implementation of conditions might have jeopardized the credibility of reforms. Investor uncertainty about the implementation and sustainability of adjustment programs are a major impediment to supply response. Several countries in SSA (Burkina Faso, Equatorial Guinea, Sierra Leone, Sudan, and Zimbabwe,) abandoned their efforts towards adjustment after one or two initial loans. Also, the adjustment programs may have been too ambitious and included too many conditions thus jeopardizing their sustainability. Third, some of the special structural characteristics of the countries undergoing adjustment in SSA (such as poor infrastructure, low level of education, and lack of institutions) may have prevented the full

---

[4] Using a similar statistical methodology to ours though a different base period, the Third Report on Adjustment Lending (RAL III, 1992), however, concludes that adjustment has restored growth in SSA to the moderate levels of the 1970s. Still, the majority view in the international development community, including the Bank, is that there is much to be desired in terms of restoring growth and social welfare to Sub-Saharan Africa (e.g. Summers (1992)).

desired response to price incentives and improved economic policies. Fourth, the failure of structural adjustment to restore growth in Sub-Saharan Africa may be due more to a possible decline in capacity utilization induced by the import compression precipitated by the fiscal and monetary retrenchment required by the programs, rather than because of simple declines in capacity growth. This explanation is due to Ndulu (1991) who argues that, given the imperfect substitutability between imported intermediate goods and domestically produced goods in most of the economies of SSA, the level of imports could be a reasonable approximate measure for capacity utilization in SSA.

The results of this study are somewhat encouraging in that the marginal contribution of Bank-supported adjustment programs to export performance has been positive and significant, given the potentially important positive inter-linkages between export growth and overall economic growth.[5] On the other hand, the findings that adjustment programs have not significantly affected overall economic growth in SSA and have had a deleterious effect on investment, lend credence to those who call for more explicit considerations of the peculiar initial conditions of the economies of SSA in the design, emphasis and time horizon of the adjustment programs recommended for SSA (e.g. Helleiner op. cit.). In order to facilitate the process of smooth and efficient allocation of resources, a redefined but important role for governments in reforming African economies is in order. While fiscal and monetary retrenchment are still indispensable for the success of reforms, more public investment on infrastructure, human capital and agricultural technology is particularly critical for generating supply response in SSA. Furthermore, efforts need to be made to raise the credibility (to the private sector) of policy reforms and to enhance the degree of program implementation. Also, our results clearly show the critical role (of the politically-sensitive issue) of "governance"[6] and political stability in influencing adoption, implementation, sustainability and credibility of adjustment programs.

---

[5] Though there is growing evidence of a stable positive relationship between openness (or even exports growth -- an indicator of 'revealed' policy) and overall economic growth for developing countries as a group, there is considerable skepticism about the strength of this relationship for SSA (see for example the survey paper by Helleiner (1991)). More recently, however, Matin (1992) finds strong and robust evidence on a positive relationship between economic performance and openness in SSA. He explains his findings by that unlike the previous cross-section estimation with period average data, his panel data analysis using a fixed effect model avoids obscuring the significant changes in openness that have occurred over the last decade in SSA. Moreover, he argued that the cross-section estimation fails to control for unobserved country-specific differences that can bias the coefficients' estimates.

[6] A broad definition of the term "governance" is given by Landell-Mills and Serageldin (1991) as "the use of political authority and exercise of control over a society and the management of its resources for social and economic development". Also see the above reference on further elaboration on the meaning of governance, characteristics of good governance and means of fostering good governance, among other issues.

2. INTRODUCTION

Over the past two decades a number of factors (including economic mismanagement, fall in terms-of-trade, the weather and political instability) have adversely affected economic performance in Sub-Saharan Africa (SSA). Among all the developing regions of the world, SSA has been the most unstable politically (plagued by coups, civil strife, ethnic violence, border conflicts and secessionist wars). Many governments has taxed farmers' output at high rates both directly through inefficiently run state marketing boards and indirectly by overvalued real exchange rates. Since independence, many countries have assigned low priority to agriculture. As a consequence of the lack of political stability and accountability and the lack of proper economic incentives economic performance has deteriorated.

The economic malaise facing SSA is serious. After an impressive start at independence, SSA is today the poorest and least developed region in the world and it is getting poorer with time. About three fourths of the countries in the region are classified in the low-income category. Furthermore, of all the developing regions in the world, SSA is the most overburdened by foreign debt, the most dependent on foreign financial and technical assistance, the most dependent on food aid and imported food, and has the worst record on social indicators. In the mid-1950s, SSA was essentially self-sufficient in food and some countries were even exporting foodstuff. Since the 1960s, however, food production per capita in the region has been dropping at an alarming rate. Today, malnutrition, starvation and child mortality is widespread throughout the region.

The economic deterioration reached alarming proportions in the late 1970s and by the early 1980s many countries attempted to reverse their economic downfall through economic policy reforms assisted by the World Bank and the International Monetary Fund (IMF) (and other multilateral and bilateral agencies). The need for major change in the economic environment of these countries became clear in the early 1980s following rapid deterioration in their sectoral and overall economic performance and a significant decline in the standard of living of their citizens. Most countries had experienced a steady downtrend in their real income per capita since the mid-1970s, and in the early 1980s the income levels in many countries had fallen to alarmingly low levels. Most other major indicators of macroeconomic performance (saving, investment and trade) had shown signs of considerable weakness and deterioration since the mid-1970s.

Inappropriate policies coupled with the lack of diversity in the export base for many countries in SSA have left many countries extremely vulnerable to external shocks and the vagaries of weather. The failure of many countries throughout the 1970s and early 1980s to accommodate the adverse effects of negative external shocks have compounded the negative impact of these shocks. By the early 1980s, it became clear that most of the adverse external shocks (deteriorating terms-of-trade, drying up of foreign capital and increase in international real interest rate) were of a long term nature

and that countries would have to adjust. Hence, by the beginning of 1980s, many countries realized the urgent need for economic policy reforms to address short-term balance of payments crises and medium to long term productivity improvements.

World Bank structural adjustment programs were designed to enable countries reform their policies in order to boost the structure of incentives and raise the profitability of the various sectors without unduly high reductions in consumption per capita during the initial stages of the programs. Structural adjustment programs consist of policy reforms aimed both at stabilizing the macroeconomy to bring aggregate demand more in line with available resources and at eliminating the gaps between prices and social marginal costs at the sectoral level. These programs generally emphasize outward-oriented trade strategies. It is expected that economic agents will react favorably to such incentives and improved economic environment by investing in the tradables sector of the economy, thus linking adjustment and growth.

At the end of 1989, 28 countries in SSA had active Bank-supported adjustment programs, and 27 had IMF programs (World Bank 1991a, p. 7). A few studies have been conducted to investigate the effectiveness of adjustment programs in a diverse group of developing countries (World Bank 1988a and 1990a; Faini et al. 1990; Conway 1991; Khan 1990). However, there has been little done in the way of understanding both the factors leading to participation in adjustment programs and the effectiveness of these programs in the sole context of SSA.

The aims of this study are four-fold. First, an analysis of the nature of the economic and social crisis is performed. Also, the causes of the crisis are discussed. One of the main conclusions of the later section is that unsustainable macroeconomic, exchange rate and trade policies were responsible in important ways for the economic decline, however, the peculiar conditions of the economies of SSA should be explicitly incorporated in the design of a future economic reform and development strategy for SSA.[7] Second, an analysis of the factors influencing a country's participation in adjustment programs is performed. The third aim of the study is to econometrically investigate the effectiveness of World Bank adjustment programs. The modified-control-group approach (World Bank 1990a, pp. 23-25) is used as a statistical technique for analysis. However, the present study goes beyond the analysis of the World Bank report by incorporating non-economic but important determinants of economic performance such as political stability and internal shocks (e.g. droughts). Furthermore, the statistical framework used for identifying and estimating marginal program effects allows for formal testing of the model restrictions regarding the participation

[7] The forthcoming African Adjustment Study (Jones (1992)), will attempt to examine the validity of the critique leveled at the reform programs, in order to assess the need for and the extent of the required changes to those programs.

decisions in the adjustment programs. Finally, the results of this study are used to draw broad policy conclusions about future adjustment programs, which are presented in the previous section.

3. NATURE OF THE CRISIS

Most countries in SSA have now experienced about two decades of steady deterioration in their aggregate economic performance. This section discusses the nature and dimensions of the macroeconomic crisis in the region.

3.1 Declining Real Income and Sluggish Growth

Perhaps the most dramatic deterioration in economic performance is indicated by the stagnant or rapid fall in the real income per capita since the mid-1970s (Figure 3.1). Since the beginning of the 1980s, real income per capita has experienced a downward trend in SSA, while low-income developing economies in other regions of the world have witnessed a continuous upward trend in their real income per capita. In fact, while real income per capita in all developing countries as a group has doubled between the early 1970s and the late 1980s, real income per capita in SSA has fallen back to about the same level as it was in the early 1970s. Eight countries (Chad, Ghana, Liberia, Madagascar, Niger, Uganda, Zaire and Zambia) experienced severe drop in real income per capita of more than 20 percent between the early 1970s and late 1980s.

The start of the economic crisis in SSA which coincides with the first oil shock of 1973 has intensified after the second oil shock of 1979. Hence, between 1980 and 1987 the real income per capita fell by about a quarter in SSA whereas South Asia and all low-income developing economies experienced 28 and 35 percent rise respectively in the same variable. In certain countries (such as Zambia, Liberia, Nigeria, and Sao Tome/Principe) real income per capita dropped by more than a quarter between 1980 and 1987. However, not all countries experienced a fall in their real income per capita. Between 1960 and 1987, six countries (Botswana, Burundi, Congo, Lesotho, Mauritius and Swaziland) had been successful at more than doubling their real income per capita. Seven other countries (Cameroon, Cote d'Ivoire, Gabon, Kenya, Malawi, Seychelles and Togo) managed to raise their real income per capita by at least 50 percent in the same time span.

Growth in real GNP per capita in SSA lagged behind other developing regions of the world in the 1960s, 1970s and 1980s (Table 3.1). In the period 1960-89, the real GNP per capita grew at 1.6 percent in South Asia and only at 0.4 percent in SSA. Certain countries (such as Ghana, Sierra Leone, Sudan, Madagascar, Zaire, Niger, Senegal, Benin and Mauritania) experienced poor growth continuously. However, the performance in terms of per capita growth was not uniformly poor either across countries or over time. The average annual per capita growth rates in Botswana, Burundi, Congo, Lesotho, Swaziland, and Seychelles and to some extent in Mauritius, Cameroon, and Kenya were outstanding in the three decades investigated.

Also, the very poor growth performance of several countries in SSA in the 1980s should be contrasted with the relatively good performance of these countries soon after independence in the

period 1960-70 when they experienced positive growth rates. The economic crisis in SSA became more apparent in the 1980s after the second oil shock when more than half of the countries in the region experienced negative growth rates in real GNP per capita. The region as a whole experienced a negative growth rate of -1.6 percent in the period 1980-86 whereas all low-income developing economies in South Asia experienced a respectable growth rate of 2.7 percent in the same period. The situation deteriorated further in the period 1986-89 when the growth rate of all countries in SSA was -1.7 percent whereas the South Asian economies grew at an impressive rate of 3.6 percent and all low income economies as group grew at 4.2 percent.

3.2 Declining Investment and Saving

The gross domestic investment ratio which rose almost continuously from 1970 to 1976 to reach 23 percent of GDP started a downturn since then to attain a minimum of about 15 percent in 1989 (Figure 3.2). The poor performance of the investment ratio can be contrasted with the more-or-less continuous upward trend in that variable in other developing regions of the world (namely, low-income developing economies) over most of the period 1970-89.

The domestic saving ratio was very erratic in SSA throughout the 1970s and 1980s (Figure 3.3). This is to be contrasted with the generally upward trend in that variable in other low-income regions. After reaching a high rate of 23.2 percent of GDP in 1974, the general trend in the saving rate in SSA has been a downward one since then to hit an all time low of 9.8 percent in 1983. Although there was a slight recovery in the saving rate in the following years, its level remained very low in SSA in comparison with other low-income regions. Hence, the saving rate in South Asia which was slightly lower than that in SSA in 1970 (at 14.3 percent) caught up with its counterpart in SSA by the beginning of the 1980s to reach about 18 percent by the late 1980s and stabilized at approximately that level throughout the 1980s. The rapid decline in the saving ratio in the 1980s coincides with the drying up of capital inflows into the region.

3.3 Deteriorating Export Performance and Current Account Balance

The poor macroeconomic performance is closely related to the region's poor export performance and the large current account deficits. In 1988, SSA with a population of about 464 millions had exported about the same dollar value of goods and services as Austria with a population of only 7.6 millions. A recent study by Svedberg (1991) finds that most countries in SSA had poor export performance in the period 1970-85 in the three dimensions examined: (i) relative to LDCs, (ii) in absolute terms, (iii) and compared to own performance in an earlier period (1954-69). His findings are confirmed by the data in Tables 3.2a-3.2e which summarize the aggregate and agricultural export performance.

After an impressive export performance in the late 1960s and early 1970s relative to other low-income regions, the export volume in SSA followed a general downward trend since then to reach an all time low in 1982 (Figure 3.4). Between the periods 1965-80 and 1980-88 the growth of exports in SSA fell from 6.1 percent, the best and strongest among all developing regions, to -0.7 percent (Table 3.2a). From Table 3.2b it is clear that countries in SSA have lost about 70 percent of their world and LDC total export share between 1950 and the late 1980s. The share of African total exports in world total exports fell from 3.3 percent in 1950 to 1.0 percent in 1988. The drop was very fast in the 1980s. Hence, between 1980 and 1988, SSA lost 60 percent of its world and LDC export share. Also, the share of merchandise exports in total LDC merchandise exports (of countries in SSA as a group) witnessed a fast decline in the 1980s whereas low-income economies in other regions saw an improvement in their export share in the same period (Figure 3.5). In fact, the low income economies of South Asia regained much of the market share in the 1980s that they had lost in the 1970s. The gain in their market share for merchandise exports coincides with the dramatic loss of the market share for merchandise exports from SSA.

The poor performance of the overall exports sector was closely linked with the very poor performance of agricultural commodity exports (Tables 3.2c-3.2e). Hence, in the period 1970-85, the real export growth rates of both food items and agricultural raw materials for SSA were considerably lower than those of the other developing regions (Table 3.2c). Also, SSA's loss of its share of food exports and exports of agricultural raw materials in total world exports for corresponding items was the most dramatic of all developing regions (Table 3.2d). Hence, between the 1970s and the 1980s, SSA's world market share of coffee, cotton, sugar and cocoa shrank by 22, 19, 15 and 12 percent respectively (Table 3.2e). The poor performance of the food and agricultural commodity exports from SSA has been an important factor behind the loss of export shares of these items.

The poor export performance of SSA relative to other low-income developing regions is reflected in the poor performance in its current account balance (as a percentage of GDP) relative to other developing regions (Figure 3.6). Except for 1974 and 1985, SSA has experienced larger current account deficits than other low-income regions in the period 1970-88. The current account of countries in SSA experienced tremendous difficulties in the 1980s. Thus the deficit for SSA as a whole rose from 3.9 percent of GDP in the 1970s to above 6 percent of GDP in the 1980s -- more than 50 percent increase.

3.4 Mounting Debt Burden

The foreign debt burden of countries in SSA has historically been a small fraction of total debt outstanding of LDCs (Figure 3.7). For instance, in 1989 it represented only 12.8 percent of total external debt of LDCs whereas in the same year Latin American debt represented 36.8 percent

of LDC debt. However, on closer look, SSA's debt crisis (as measured by the total debt to GNP ratio and the debt service to total export ratio) in the 1980s was more acute compared with other developing regions (Table 3.3 and Figures 3.8 and 3.9). In 1970 the ratio of total debt to GNP in SSA was only 14.1 percent compared with 15.4 percent in South Asia and 18.6 in Latin America. However, by 1980, this ratio had doubled for SSA, whereas it rose only moderately for South Asia. At the end of 1989, the debt in SSA was about US$147 billion or about 100 percent of total GDP in the region and more than three times its export earnings. In that same year the total debt of Latin American countries was about US$422 billion or about three times that in SSA. Yet this debt represented only about 49 percent of total GNP. In fact, the proportion of the Latin American debt to GNP has been declining every year since 1985, whereas it has risen very rapidly in SSA since the early 1980s. In 1988, 16 countries in SSA had a debt to GNP ratio of more than 100 percent (Table 3.3). In certain countries (Congo, Guinea-Bissau, Mauritania, Somalia and Zambia) the external debt owed by each person in 1988 was more than twice the per capita GNP (Table 3.3).

Also, since the late 1970s there has been a dramatic increase in the debt service as a percentage of exports in SSA (Figure 3.9). The debt service ratio rose from a manageable 4.2 percent in 1974 to an average of 23 percent in 1985. Although there was a decline in the debt-service ratio between 1984 and 1986, and between 1988 and 1989, the average for the whole period of 1980-89 has remained very high at about 16.1 percent. The region as a whole has faced great difficulty in servicing its debt. In the past few years, well over three fourths of the countries in the region have had to reschedule their debt.

There is some indication from the above evaluations of the dimensions of the crisis that developing regions which have maintained and raised their saving and investment rates, and raised their export volume growth, have been successful at increasing their real income per capita. The economic distress in SSA is serious. The poor economic record poses a serious challenge to the development community in general and to African policy makers in particular. It is the challenge of identifying feasible avenues to reverse the downward trend in economic performance and promoting of economic and social prosperity. It is also the challenge of finding quick solutions to the problems of widespread hunger, malnutrition, poverty and infant mortality. In that regard, it is important to correctly identify the various causes of the poor economic record and to take strong and bold actions to deal with the sources of the crisis which African policy makers have control over. It is the aim of the next section to review the causes of the crisis.

4. CAUSES OF THE CRISIS AND ADJUSTMENT LENDING IN SUB-SAHARAN AFRICA

Since the early 1980s, two different views of the causes of the African crisis have emerged -- the neoclassical view on the one hand and the structuralist view on the other.[8] In this section we will provide first a brief overview of the above two approaches. Appendix A contains a detailed review of these two polar positions and a synthesis of the two approaches based on available empirical evidence. A summary of this synthesized view -- to which the Bank view seems to be converging over time, is stated later on in this section. The section closes with a description of the main components of the World Bank Structural Adjustment Lending Programs, and the extent of its adoption by SSA countries. Appendix B provides the arguments on the rationale for these programs.

4.1 Causes of the Crisis

Mkandawire (1989) has summarized the main theoretical underpinnings of these two different views of the causes of the crisis:

> The structuralist view is one which highlights a number of features and "stylized facts" that at almost every point contradicts the neoclassical view -- class-based distribution of income rather than marginal productivity based distribution of income; oligopolistic rather than the laissez-faire capitalist markets; increasing returns to scale or fixed proportions production functions rather than "well-behaved" production functions with decreasing returns and high rates of substitution; non-equivalent or "unequal exchange" in the world rather than competitive, comparative advantage based world trade system; low supply elasticities rather than instantaneous responses to price incentives; etc., (p. 3).

The early official World Bank's view reported in the Berg Report (World Bank 1981), has identified domestic policy factors as the main cause of the economic deterioration in SSA. The report argued that inappropriate macroeconomic, exchange rate and trade policies have undermined the long-run growth prospects of the countries in the region. Also, heavy taxation of farmers' output has been responsible for the poor performance of the export sector in most countries in SSA. Furthermore, overextended public and parastatal sectors have imposed heavy pressures on the domestic budget leading to high levels of fiscal deficits. These inappropriate policies, over protracted periods of time,

---

[8] In fact this sharp dichotomy between orthodoxy and structuralist positions on Sub-Saharan Africa does not account for a large number of scholars whose views of the causes of the crisis fall in between those two extremes. This admittedly oversimplified set-up can be helpful in sharpening the discussion, however. Furthermore, the synthesis discussion of appendix A allows relaxing this sharp distinction.

have led to the rapid deterioration of the agricultural sector performance, the key sector in most African nations. Also, it has been argued that the lack of an appropriate exchange rate policy framework in developing countries may have compounded the negative effects of adverse external shocks [e.g. Khan 1986, p. 414]. For instance, the resistance to nominal devaluations of domestic currencies in the face of deteriorating terms-of-trade and drying up of foreign capital led to extended periods of overvaluation of the real exchange rates in many countries in SSA in the early 1980s.

The main proponent of the structuralist view, the Organization for African Unity (OAU) has voiced its position in the 1980 Lagos Plan of Action. The latter placed most of the blame for the dire economic performance in SSA on factors which are beyond the control of economic policy makers in the region -- namely, ever-declining real commodity prices and declining overall terms-of-trade, world recession, rising international interest rates and debt burden, and extended periods of drought.

The above two sharply contrasting views of the causes of the crisis in SSA have led to two very different development strategies for the region. Oyejide (1990) has summarized these two diametrically opposite policy prescriptions as follows:

> The African view enshrined in the Lagos Plan of Action recommended the promotion of regional co-operation and integration based on an essentially inward-looking strategy, which at the same time sought to put some distance between the alleged fragile, rigid and undiversified African economies and an 'unreliable and hostile' external environment. The World Bank's policy recommendation, on the other hand, has pointed in the opposite direction by urging the adoption of an outward-oriented strategy that would become operational through adjustment and appropriate domestic policy reforms, (p. 2).

A careful review of the empirical evidence (appendix A) suggests the following broadly stated synthesized position: There is no doubt that the sources of the crisis in SSA are multi-dimensional. However, most recent empirical studies point to the importance of inappropriate domestic policies behind the economic malaise in SSA. Hence, although African governments cannot do much about the external sector and climatic shocks, they can certainly take measures to enhance the economic policy environment in their respective countries by undertaking appropriate policy reforms. On the other hand the peculiar structural characteristics of the African economies may require altering the standard Bank reform programs in the fundamental ways. Even though macroeconomic stability, microeconomic efficiency and outward-orientedness should remain the main underpinnings of the program; some critics argue that there should be as well a balanced emphasis on institutional structural reforms, especially at earlier stages of the programs. Another related issue is that a

successful reform and development strategy for Africa must give due consideration to the critical need of reforming African countries to adequate and sustainable external assistance and to relatively longer time, before they could produce tangible results.[9]

4.2 Bank Adjustment Lending Programs in Sub-Saharan Africa

More and more, the leading regional institutions (such as the Economic Commission for Africa and the African Development Bank) and governments in SSA are recognizing the important role of inappropriate domestic policies which led to the economic crisis. For instance, the joint 1985 ADB/ECA Economic Report on Africa pointed to the adverse effects of inappropriate policies on agricultural and industrial performance in SSA. Once it is recognized that inappropriate policies have been responsible for the economic crisis in SSA in important ways, it becomes clear that domestic policy reforms (supported by complementary institutional reforms) offer a plausible avenue to reverse the declining trends in economic performance in the region. Since the focus of this study is on the effectiveness of World Bank adjustment programs in SSA, the rest of this section (and appendix B below) will concentrate on these programs.[10]

Countries in SSA have been slower than low-income countries in other regions to start the adjustment process. However, in the past five years, many countries in SSA have made significant progress in adopting, implementing and intensifying policy reforms. Most of these countries either have started or have intensified adjustment efforts since 1986. Hence, of the 34 countries in SSA which had an adjustment program in the period 1980-90, 23 had started in 1986. Also, of the 114 new loans approved by the World Bank to countries in SSA to support policy reforms in the period 1980-90, about 70 percent were made in the period 1986-90. Some countries such as Ghana, Kenya, Madagascar, Malawi, Mauritius and Tanzania have implemented intensive and bold policy reforms. Signs of improvements in countries which started an early program of intensive adjustment (such as Ghana, Mauritius and Malawi) have encouraged others to embark on comprehensive economic policy reform programs.

World Bank and IMF type structural adjustment programs refer to the use of quick-disbursing loans in support of major macroeconomic and microeconomic policy reforms. The World Bank has

---

[9] Specifically structural adjustment programs in SSA are claimed to be underfunded, led to cut in expenditure required for enhanced capacity utilization and capacity growth, placed too much emphasis on traditional export promotion could only lead to declining TOT while retarding industrialization and not helping export diversification. Finally, it is also claimed that adjustment programs have had adverse social consequences. While some of these and other claims have been refuted or marginalized by recent evidence (e.g. RAL II report), the issues regarding underfunding, debt reduction, the import-induced capacity utilization effect, and the possible effects of traditional export expansion; merits further studies.

[10] The rationale for the strategies for African development laid out in the Lagos Plan of Action is given in detail in the 1989 United Nations Economic Commission for Africa report African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation.

supported macroeconomic stabilization and broad-based policy changes through structural adjustment lendings (SALs) and sector-specific reforms through sectoral adjustment lendings (SECALs). Most of the initial adjustment loans were in support of broad-based macroeconomic policy reforms. However, since the mid-1980s, SECALs have been growing in importance. Given the importance of agriculture in SSA, about half of all SECALs have been geared towards that sector. The World Bank is continuously rethinking its strategy concerning adjustment programs. Policies aimed at reforming the key sectors and institutions have risen in importance in the late 1980s. Also, more and more attention is being given to the social dimensions of adjustment programs. For instance the World Bank (1991a) notes that "The Bank and other donors are increasing supporting reforms of social policies, data collection to improve the design of social policy, special interventions to mitigate short-term burdens of adjustment on the poor, and the use of project and social sector loans to achieve major social objectives, (p. 8)."

Structural adjustment programs consist of policies aimed both at stabilizing the macroeconomy and at reforming the structure of incentives in various sectors of the economy and generally emphasize outward-oriented trade strategies. The stabilization component of the adjustment programs which works mainly on the demand side is aimed at controlling inflation and correcting temporary imbalances in the balance of payments via expenditure reducing policies. However, structural (supply side) policies which are aimed at improving the efficiency of resource use and creating more appropriate incentives, emphasize the following: liberalizing the trade regime; deregulating the domestic goods market; reforming the public sector; enhancing agricultural price incentives; removing obstacles to saving and investment; and strengthening of institutions.

The following groupings of the policies involved in adjustment programs can be made: demand-side policies; supply-side policies; and policies aimed at improving international competitiveness.[11]

- Demand-side policies involve the traditional macroeconomic policies (monetary, fiscal and exchange rate) aimed at reducing domestic aggregate demand.
- The aim of supply-side policies is to enable the economy raise production for any given level of resources. Two types of supply-side policies exist. First, there are policies designed to improve the efficiency in the use of scarce resources such as capital and labor by reducing domestic distortions caused by government interventions like price controls, taxes and subsidies, and trade restrictions. Second, there are policies designed to improve the capacity of the economy to raise long-run output

[11] See Khan and Knight (1985), for instance.

growth. Such policies include those designed to raise incentives for saving and investment, and those to increase the efficiency of capital and the inflow of foreign savings.

- Policies aimed at improving international competitiveness are mainly geared toward affecting the country's real exchange rate and export performance by raising the prices of tradables relative to those of non-tradables. Both demand and supply side policies are used towards that end.

The purpose of these policy reforms is to induce a significant overhaul in the economic environment of the countries concerned in order to boost the structure of incentives and raise the profitability of the tradables sector. It is expected that economic agents will react favorably to such incentives and improved economic environment by investing in the tradables sector of the economy, thus providing the connection between adjustment and growth.

In most countries undergoing adjustment programs, policy reforms are addressed in several key areas of the economy: the macroeconomy; the agricultural sector; the trade sector; the financial sector; and the public sector. The World Bank (1991a) has identified eight areas where intensive reforms have taken place in SSA: (a) fiscal management; (b) exchange rate; (c) external trade; (d) agricultural price and marketing; (e) financial sector; (f) civil service; (g) public enterprise; and (i) domestic trade. There have been varying degrees of success with policy reforms in SSA. The World Bank (1988a) notes that substantial progress has been made in (a) exchange rate flexibility and export incentives, (b) progress in the replacement of quantitative restrictions by tariffs and (c) agricultural policy reforms. However, success with import liberalization and institutional reforms has been much slower.

Appendix B to this paper gives further details on the extent of and rationale for policy reforms both at the macroeconomy-wide and the sectoral levels and for the support of institutional reforms.

5. EFFECTIVENESS OF ADJUSTMENT PROGRAMS

5.1 Analysis of Initial Conditions, Exogenous Shocks and Policy Stance

The aim of this sub-section is to evaluate the initial conditions in terms of policy stance and economic performance for SSA and LICs during the periods: 1970-80, 1981-84 and 1985-89. The latter period preceded the onset of the economic crisis in the first half of the 1980s. The period 1981-84 was marked by the decision to participate in Bank-assisted structural adjustment programs. Each of the two groups of countries (SSA and LICs) is divided into three categories: early intensive adjustment lending (EIAL) countries that received two or more SALs or three or more adjustment loans (SALs or SECALs), before 1986; other adjustment lending (OAL) countries that started a program after 1985 or received fewer than two SALs or fewer than three adjustment loans before 1986; and no adjustment lending (NAL), countries that did not participate in adjustment in the period 1980-88 (NAL).

The main objective of the evaluation is to examine whether there exists any systematic association between the initial conditions in the 1970s and the response of the economies of SSA to the massive adverse exogenous shocks of the late 1970s and early 1980s (and hence between performance in 1981-84 and the decision to participate in Bank-assisted economic reform on the part of the countries with the most unsustainable initial conditions).

5.1.1 Initial Conditions: 1970-80

Table 5.1 provides a summary of economic conditions in the 1970s for the three groups of comparators.[12] Starting with the comparisons within SSA, it is clear that the EIAL and OAL countries have pursued more expansive macroeconomic policies than their NAL counterparts, with fiscal deficit to GDP ratio averaging 6.6, 3.6 and 2.4 percent respectively. Not surprisingly the rate of domestic inflation averaged 14.9 and 14.8 percent respectively for the first two groups, compared to 10.9 percent for NAL countries. Also the EAIL and OAL countries have been less conservative compared to the NAL countries in terms of external debt policies. The external debt to GDP ratio averaged 33.1 and 26.3 percent respectively for EAIL and OAL countries, compared to 23.5 percent for NAL countries. The debt service to export ratios on the other hand, averaged 7.7 and 5.5 percent, respectively for the EAIL and OAL countries and only 3.8 percent for the NAL countries.

Over the period 1970-80, the domestic absorption to GDP ratio (the negative of the resource balance ratio) for the three groups averaged 10.6, 13.6 and 10.1 percent respectively. Also, in the

---

[12] The analysis will be confined to within SSA comparisons; but quantitatively, all the main conclusions carry over to the case of the LICs comparison.

1970s the two "would be" adjusting groups of countries did not adopt more export-oriented policies or achieve better export performance compared to the NAL countries. While the real exchange rate index for the three groups ranged between 93 and 98, export to GDP ratio averaged 30.2 percent for the EIAL and NAL countries compared to only 21.0 percent for OAL countries. These comparisons provide a case against the relatively more expansive external debt policies adopted by the EIAL and OAL countries in the period prior to reform.

Perhaps the most significant aspect of the initial conditions that set NAL countries apart from the other two groups is the record on growth and the implied productivity of investment. While the NAL countries managed to achieve an annual average rate of growth of 6.0 percent over the 1970s, the EIAL and OAL countries grew by only 3.7 and 3.2 percent respectively in the same period. There was no significant difference among the three groups, however, in terms of aggregate investment expenditure (with investment to GDP ratio averaging 24.7, 20.5 and 21.1 percent respectively for the EAIL, OAL and NAL countries). Clearly the EIAL and OAL countries were substantially outperformed by NAL countries in terms of real economic growth despite the comparable investment ratios across the three groups. There was a significant difference in the aggregate domestic saving to GDP ratios among the three groups of countries with average values of 16.1, 12.8 and 6.4 percent respectively for the EAIL, NAL and OAL countries.

The above analysis suggests that EIAL and OAL countries may have suffered from rather low investment productivity prior to reform compared to the NAL countries. It has been argued that the rather sluggish growth in SSA despite adequate investment, may be attributed to low level of capacity utilization as opposed to capacity growth, driven by investment. Given the imperfect substitutability between imported intermediate goods and domestically produced goods in most of the economies of SSA, the level of imports may be a reasonable measure for capacity utilization in SSA (Ndulu 1990). According to Table 5.2 this justification may be a valid explanation for the case of the OAL countries with an average import to GDP ratio of 34.7 percent during the 1970s, but it cannot explain the low growth performance in the EIAL countries compared to their NAL counterparts with an average import ratio of 40.8 percent for the first group and about 40.3 percent for the second.

5.1.2 Exogenous Shocks, Policy Stance and Adoption of Adjustment: 1981-84

The above analysis indicates that countries in SSA that undertook Bank-assisted adjustment entered the 1980s with relatively weaker economies. These countries did not fare well compared to the NAL countries in terms of: (i) actual growth performance as well as the potential for future higher growth; (ii) sustainability of external finance and external debt strategy; and (iii) the ability to control excess aggregate demand and achieve internal balance. In light of these findings, it is natural that the massive exogenous shocks that dominated the late 1970s and the early 1980s have had a much more

devastating impact on the economies of the EIAL and OAL countries of SSA than those of the NAL countries.

Table 5.3 shows the magnitudes of the terms-of-trade, foreign interest rate, and total external shocks for three period comparisons: 1981-84 compared to 1970-80, 1985-89 compared to 1970-80, and 1985-89 compared to 1981-84. In the first period comparison, the EIAL and NAL countries were subject to similar and much bigger negative external shocks compared to the OAL countries. The magnitude of the aggregate shock relative to GDP was -15.4 and -16.4 percent respectively for the EAIL and NAL countries, almost twice the total negative shock experienced by the OAL countries. For all three groups, the collapse of the terms-of-trade for SSA has been the factor with the most devastating effect; it accounted for 88 percent of total shock for the EIAL countries, and for 83 and 93 percents, respectively for the OAL and NAL countries.

Economic performance for all of the three groups is provided in Table 5.4. The EIAL countries of SSA experienced a dramatic decline in real GDP in 1981-84 when it grew at only 0.1 percent per year (compared to an average of 3.7 percent for the period 1970-80). The OAL countries maintained their 1970-80 growth level of 3.2 percent per annum. The rate of growth in the NAL countries, on the other hand, declined to 4.5 percent per year over the first half of the 1980s -- this was lower than the previous period average but still high compared to the other two groups. In the period 1981-84, both the EIAL and NAL countries experienced reductions in their investment ratios by 26 and 14 percent respectively and in their saving ratios by 39 and 17 percent. The OAL countries of SSA, however, managed to achieve a slight increase in their average investment ratio by about 5 percent in the period 1981-84, while their average saving ratios declined by 8 percent.

Furthermore, the NAL countries had a clear edge over the other two groups in the period 1981-84 in terms of domestic inflation and export performance. The rate of domestic inflation declined for the NAL countries from an annual average of 10.9 percent in the period 1970-80 to a single digit average of 8.3 percent, while their average export ratio increased from 30.2 percent to 32.9 percent. The reverse happened for the EIAL and OAL countries. Between the periods 1970-80 and 1981-84, inflation increased from an annual average of 14.9 percent to 21.0 percent in the EIAL countries and from 14.8 percent to 24.5 percent in the OAL countries. Also the average export to GDP ratio declined from 30.2 percent to 27.7 percent for the first group, and from 21.0 percent to 19.6 percent for the second.

Despite the similarity in terms of the external shocks experienced by EIAL and NAL countries of SSA, economic performance in the last group was uniformally superior compared to the first. Also despite witnessing twice as much negative external shocks compared to OAL countries, the NAL group has performed better especially in terms of domestic inflation and exports. An interesting question to consider is whether this happened in spite of important changes towards

reform-oriented policies on the part of EIAL and OAL countries or whether the policy stance taken by these countries in fact was not significantly changed from those of the 1970s.

Table 5.2 provides a summary of the evolution of policy stance by the three groups of countries over the period 1970-89. The real exchange rate of EIAL countries of SSA appreciated considerably over the periods 1981-82 and 1983-84, where the real exchange rate index increased from 93.8 in 1970-80 to 120.3 in 1981-82 and 126.3 in 1983-84. The real exchange rate of EIAL countries was more appreciated than that of NAL countries where the real exchange rate rose from 98.0 in 1970-80 to 106.7 and 117.2 in the two following periods. Given the much weaker initial conditions (in 1970-80) for the EIAL countries, and the change in the fundamentals as reflected by the sizable adverse exogenous shocks that effected these countries, it is clear that these EIAL countries might have experienced considerable overvaluation over the 1981-84 period. Therefore, the observed decline in exports from EIAL countries over this period is consistent with the appreciated real exchange rates of these countries over the period. This analysis also applies to the decline of exports from OAL countries even though the appreciation was much smaller for this group, where the real exchange rate appreciated by only 16 percent between 1970-80 and 1983-84.

In terms of fiscal policy, 1981-82 has been a period of continued expansive macroeconomic policy on the part of all groups. Compared to 1970-80, the fiscal deficit to GDP ratio increased by 62, 89 and more than 200 percent respectively in the EAIL, OAL and NAL countries. The fiscal expansion continued over the following period for OAL and NAL; between 1981-82 and 1983-84, the deficit ratio increased by 10 and 48 percent respectively for OAL and NAL. The EIAL countries, on the other hand, managed to reduce their average fiscal deficit by 32 percent between the two periods. This was still, however, higher than the 6.6 percent deficit ratio registered for 1970-80. Even though the fiscal deficit in all of the three groups of countries might not have been sufficiently brought under control over 1981-84, it appears that aggregate demand has been steadily retrenching in EIAL and NAL. The domestic absorption ratio for EIAL countries decreased from 10.6 percent in 1970-80 to 8.4 percent in 1981-82, and to 4.5 percent in 1983-84. For the NAL countries this ratio decreased from 10.1 percent in 1970-80 to 8.6 percent in 1981-82, and it turned to -0.2 percent in 1983-84. The aggregate demand policy in the OAL countries, however, has been quite expansive over 1981-84 when the absorption ratio deteriorated from 13.6 percent in 1970-80 to an average of 18.0 percent in 1981-84. The reduction of aggregate demand in both of EIAL and NAL countries has been partly achieved by import compression. Between 1970-80 and 1981-84, the import ratio declined by 16 percent and 8 percent for the EAIL and NAL countries, respectively. The average import ratio in the OAL countries, on the other hand, increased by 8 percent over the two periods, reflecting the continued expansion in aggregate demand in these countries.

The following broad conclusions for SSA can be drawn from the above evaluations:

(i) The adverse exogenous shocks that affected most LICs especially those of SSA, over the first half of the 1980s, have certainly been the trigger that pushed the EIAL and OAL countries to the brink of economic crisis and to the subsequent decision to adopt Bank-assisted reform programs.

(ii) The exogenous shocks by themselves, however, do not explain either the crisis or the decision to adopt programs. The interaction between the external shocks and the initial conditions that prevailed in the 1970s is key to understanding why these countries embraced reform.

(iii) Except for an effort by the EIAL countries at controlling fiscal expansion, other groups had large fiscal deficits during the first stage of adjustment. After 1983, however, when external finance became increasingly difficult[13], both the EIAL and NAL countries made considerable efforts at reducing aggregate demand, mainly through import compression.

(iv) Over the period 1981-84, the adjusting (EIAL and OAL) countries could not distinguish themselves from the NAL countries in terms of real depreciation. While the EIAL and OAL countries suffered from a dramatic rise in inflation, the NAL countries managed to reduce their average inflation rates to the single digit.

5.1.3 External Shocks and Policy Stance: 1985-89

Compared to the period 1970-80, all three groups of countries received negative shocks in the period 1985-89, although with a lesser extent than the shock of the early 1980s for EIAL and NAL countries. This implies that the external conditions were more conducive to improved economic performance over the period 1985-89 in the EAIL and NAL countries. Between the periods 1981-84 and 1985-89, the terms-of-trade improved by 1.7 and 6.7 percentage points of GDP in the EIAL and NAL countries, respectively. These terms-of-trade improvements were more than enough to account for the still rising cost of external borrowing which increased by 0.6 and 0.7 percentage points of GDP, respectively, for these two groups. The terms-of-trade for the OAL countries, however, worsened by 2.5 percentage points of GDP to add to a 0.8 percentage point foreign interest cost for these countries.

In the third period the EIAL countries of SSA clearly distinguished themselves from the others in the region in terms of fiscal policy and real depreciation. In comparison to the period 1981-

[13] See Table 5.2.

84, the average annual real exchange rate in 1985-89 was depreciated by 30 percent in EIAL countries, compared to only 13 percent for the OAL countries and a 5 percent appreciation for NAL countries. The latter also cut down on their average fiscal deficit to GDP ratio in 1984-89 by 3.2 percent relative to 1981-84 and by 0.8 percent relative to 1970-80 (compared to an increase of 1.8 and 5.4 percentage points for the OAL countries for the same period comparisons). The average fiscal deficit to GDP ratio for the NAL countries was still almost 6 percent higher in 1984-89 compared to 1970-80, even though it came down by about 1.2 percent between 1981-84 and 1985-89.

5.2 Effectiveness of and Decision to Participate in Adjustment Programs

5.2.1 Before-and-After Approach

The before-and-after approach gives a picture of what has actually happened after the implementation of programs; it does not, however, answer the question regarding the effectiveness of programs. The main drawback of this approach is that it implicitly makes the implausible assumption of "other things equal". This is not a trivial point since it is not clear whether the change in performance after implementation of the programs can be attributed to the programs or to changes in factors unrelated to programs (such as terms- of-trade or interest rate shocks).

Table 5.4 shows that real GDP growth rose significantly for EIAL countries in SSA from an annual average of 0.1 percent in 1981-84 to 3.7 percent in 1985-89. The OAL countries maintained their pre-program performance, where real GDP growth declined by 0.1 percent in 1984-89 compared to 1981-84 and by 0.2 percent compared to 1970-80. The NAL countries, however, experienced continued economic decline where average annual real GDP growth fell from a high of 6 percent in 1970-80 to 4.5 percent in the 1981-84 and to 2.3 percent in 1985-89.

The investment ratio declined steadily for all groups of countries where between 1970-80 and 1985-89 it fell by 32, 9 and 18 percent respectively for the EAIL, OAL and NAL countries. The saving ratio also declined by 32 and 17 percent respectively for the EIAL and OAL between the 1970-80 and 1985-89. The same variable increased in the NAL countries by 17 percent between 1970-80 and 1985-89. Compared to 1981-84, the EIAL countries managed to improve their average export to GDP ratio by almost 2 percent to reach close to the 1970-80 average ratio of 30.2 percent. For the OAL and NAL countries, however, the deterioration in export performance could not be arrested; between the 1981-84 and 1985-89, their average export ratio declined by 1.1 and 2.6 percent respectively.

Finally, with respect to domestic inflation, the NAL countries out-performed the EIAL and OAL countries in both 1981-84 and 1985-89. The EIAL countries were able to reduce their average

inflation in the 1985-89 a level comparable to that in 1970-80. However, the average inflation rate did not improve in the OAL countries between the 1981-84 and 1985-89.

The following broad conclusions can be made from the above analysis:

(i) In the early phase of the reform program (1981-84) which was dominated by stabilization, growth was not restored for the EIAL and OAL countries of SSA. However, growth did improve in 1985-89 in the EIAL countries after enough time elapsed and after the reforming economies adjusted to the costs of the initial stabilization phase.

(ii) The EIAL countries improved their export performance while export to GDP ratio from OAL and NAL countries continued to decline. It appears that the considerable real depreciation achieved in the EIAL countries may explain their relatively superior export performance in 1985-89 compared to that of NAL countries, since both of the two groups of countries experienced positive exogenous shocks of about the same magnitudes.

(iii) The steady decline in investment to GDP ratio in all country groups may be explained by the less-than-proportionate rise in private investment, as public investment declined as part of the cut down in public expenditure necessitated by reduced external finance or by program conditionality. The failure of private investment to be forthcoming can be attributed to at least two factors. First, public investment in SSA may actually have crowded in rather than crowded out private investment. Second, there may have been credibility problems due to doubts on the part of the private sector about the adequacy and sustainability of reforms (in the EIAL and OAL countries) or the prevailing policies (in the NAL countries).

(iv) The average increase in the import ratios of EIAL countries in 1985-89 (it declined for the other two groups) is consistent with a relatively less binding external constraint for EIAL as reflected by the resource balance indicators.

(v) The improved growth performance in EIAL countries despite the decline in aggregate investment can be explained by the enhanced capacity utilization (via increased imports) and investment efficiency achieved by these countries. The reduction in the investment ratio for these countries could have had a more significant effect in terms of allowing for higher private consumption, which should contribute to enhancing the chances for the sustainability of the reforms.

(vi) Even though the analysis supports the concern regarding the rising inflation in the adjusting countries of SSA (Chhibber 1991), it nevertheless shows that countries that undertook deep reforms and stayed with it (the EIAL countries) were able to reduce their inflation to the pre-shock levels.[14]

(vii) Finally, the indicators of political stability and political pluralism of Table 5.5 show that the EIAL countries were more politically stable on average compared to the OAL countries both in SSA and in LICs. This finding supports the view that reforms are successful, when the programs are owned, actively explained and campaigned for by governments that are politically stable (e.g. Corbo and Fisher 1991).

5.2.2 Modified-Control-Group Approach

An econometric assessment of the effectiveness of the reform program in improving economic performance in the adjusting countries (especially in the EIAL group), is the ultimate objective of this paper. The before-and-after approach is not suitable, however, for addressing the question of whether the Bank-assisted reform programs have had significant effect on economic performance.

To address this question adequately, estimations need to be done for the marginal (additional) contribution of programs for given initial conditions and exogenous shocks. This requires a methodology that allows for endogenizing the decision to participate in adjustment programs. But the validity of the maintained identification conditions regarding participation decisions must be tested as well. An appropriate methodology to address the above concerns is contained in Appendix D. The study by Elbadawi (1991c) contains rigorous specification tests for conventional endogeneity (as suggested by equation (6) of Appendix D) as well as test of assumptions (8A) and (8B) regarding the participation decisions (see Appendix D for details). Based on these specification tests, variants of equation (6) were estimated. The results of the estimation for the performance equations are reported in Tables 5.8, B.1 and B.2, while Tables 5.6 and 5.7 contain the probit estimation results for LIC and SSA respectively.

The modified-control-group methodology allows estimation of the marginal contribution of adjustment programs in adjusting countries while: (i) explicitly taking account of the potential endogeneity of the decision to participate in an adjustment program, since the same non-program factors that influence performance in the pre-program period are likely to influence the participation decision, (ii) controlling for other factors unrelated to programs that also affect performance; and (iii)

---

[14] The fact that OAL countries of SSA received a large negative external shock in the third period compared to a positive shock for the EIAL group, may account for this difference.

adjusting for the counterfactual policy stance that would have prevailed in the absence of the program.[15]

The modified-control-group model is estimated to identify the marginal effect of reform programs on economic performance in: (a) the EIAL countries of SSA relative to the OAL and NAL countries of the region; and (b) the EIAL LICs relative OAL and the NAL LICs.[16] In terms of time two possible periods can be compared: 1985-89 with 1970-80; and 1985-89 with 1981-84. The latter is used in this study.

5.2.2.1 Determinants of the Decision to Participate in Adjustment

Starting with the analysis of the program participation status function (equation (8B')), Tables 5.6 and 5.7 provide the corresponding maximum likelihood probit estimates for LICs and SSA, respectively. The tables also present the pseudo-R^2, defined by McFadden (1974) as a measure of the goodness of fit of the ML probit estimation. The decision period is 1981-84 which witnessed the first five years of intensive policy dialogue between the World Bank and member countries regarding Bank-supported reform programs, and subsequent adoption of reform by these countries.

The following variables are assumed to be important determinants of a country's decision to participate in an adjustment program in the period 1981-84: the change in the magnitude of the external shock between 1970-80 (period one) and 1981-84 (period two) (EXT21); the index of political pluralism in period two (POL2); the change in the ratio of total debt to GDP between periods one and two (DEBT21); the level of inflation in period two (INFL2); the export to GDP ratio in period two (X2); the GDP growth rate in period two (GDP2); the change in the investment to GDP ratio between period one and two (GDI21); the change in fiscal deficit to GDP ratio between period one and two (DEF21); the real effective exchange rate in period 2 (REER2); and dummy variables for Asian and Latin American countries.

The full model was estimated for the LICs and only a small subset of the above variables were used for the model for SSA (given the relatively smaller number of observations available for this group). In both models, all the coefficients have the appropriate signs and a large number of them are statistically significant. For the case of LICs the factors with the most significant effect on the decision to undertake reforms are: a higher foreign debt and inflation, and lower investment ratio

---

[15] Admittedly, there is no clearcut way to implement this counterfactual. Here, the OAL and NAL countries are used for this purpose.

[16] The EIAL group of countries for the LICs is almost identical to the EIAL countries from SSA only since it includes only Bolivia and Pakistan as non-SSA LICs.

in period two compared to period one, and a stable political environment in period two. The corresponding factors for the SSA case are: lower investment ratios and higher debt ratios in period two compared to period one, real GDP growth in period two, and political stability in period two. Also, the estimated participation indicators in both models, successfully predicted the actual country status.

5.2.2.2 Marginal Effectiveness of Adjustment Programs

In the second stage of equation the fitted value of the dependent variable from the maximum-likelihood probit equation ($\hat{d}_i$) was used as an instrument for d_i in target equation (6')-- except for the case of real GDP growth in LICs where d_i rather than $\hat{d}_i$ was used (as suggested by the specification tests of Elbadawi 1991c). Because panel data are being used, the White heteroskedasticity-robust standard errors were calculated in this estimation.

The results of the estimation of equation (6') are reported in Tables B.1 and B.2 of Appendix D for LICs and SSA. Table 5.8 presents the estimated marginal effects of the program for both groups. In addition to the variables described above as potential candidates for the estimation of equation (6'), an internal shock variable (reflecting the impact of natural conditions on domestic food production) is used (see Appendix C for details). Moreover, because of our small sample size, statistically insignificant effects in the model for SSA were eliminated from the final regression equation.

After controlling for external and internal shocks, the prevailing political atmosphere, and the initial conditions and policy stance followed in the pre-program period by each country, adjustment programs do not seem to have had a statistically significant marginal effect on the growth of the EIAL countries of SSA compared with the rest of SSA. However, there is some evidence (at the 9 percent significance level) that it improved real growth by 1 percent in EIAL LICs relative to non-program LICs.

The estimates of Table 5.8 regarding the saving to GDP ratio show a marginally significant and negative marginal program effect for SSA, where adjustment programs were estimated to have reduced the saving to GDP ratio by 8.3 percent. However, no significant marginal program effect was found for the LICs.

Adjustment programs appear to have contributed to a statistically significant drop in the investment to GDP ratio in the EIAL countries of SSA relative to either other SSA countries or to the non-program LICs. The marginal decline was estimated to be 8.4 and 5.3 percent respectively for SSA and LICs. The combination of these results on investment and the estimated nonsignificant

marginal effect of adjustment on economic growth (at least for SSA) imply that the perceived increase in the efficiency of investment supposed to have been generated by the programs was not sufficient to counterbalance the ensuing decline in investment and hence to restore economic growth. Two further implications of these two findings are that (i) more attention should be given to private sector perception about the credibility of reforms, and hence to its likely response to policies designed to enhance private sector investment, and (ii) if on the aggregate, public sector investment expenditure has in fact crowded-in rather than crowded-out private investment in SSA, adjustment programs have to allow for increased public investment in physical and human capital, while continuing to require the liquidation or curtailment of low efficiency public (and private) investment programs.[17]

The estimated marginal effect of the program on export performance is positive and highly significant for SSA, and the effect for the LICs while positive is only marginally significant for that group (12 percent significance level). After controlling for other factors, adjustment programs were estimated to have increased the export to GDP ratio of the EIAL countries of SSA by 8 percent compared to other SSA and by 2.6 percent compared to non-adjusting LICs.

The last performance indicator considered is inflation. The results of Table 5.8 indicate that adjustment programs did not significantly affect inflation. Even though the estimated marginal effect of adjustment has a positive sign, it is highly insignificant for the case of LICs and only marginally significant (at 22 percent significant level) for the SSA comparison.

Finally, according to the results in Tables B.1 and B.2, most of the factors reflecting initial conditions, policy stance, external and internal shocks, and political conditions, have had significant effects that are consistent with prior expectations. The factor that has been consistently significant is the index of political stability, where for both the model for SSA and for LICs political instability was shown to reduce growth, investment, saving and exports, and to increase inflation.

[17] The evidence on the response of investment to economic policy is analyzed in Serven and Solimano (1991).

REFERENCES

African Development Bank (1990). African Development Report 1990. Abidjan, Cote d'Ivoire: The African Development Bank.

African Development Bank and Economic Commission for Africa (1985). Economic Report on Africa 1985. Abidjan, Cote d'Ivoire and Addis Ababa, Ethiopia.

Agarwala, R. (1983). "Price Distortions and Growth in Developing Countries." Working Paper No. 575. Washington DC: The World Bank.

Akiyama and Larson (1991). "Recent Trends and Prospects for Agricultural Commodity Exports in Sub-Saharan Africa." Working Paper WPS 348. Washington DC: The World Bank.

Balassa, B. (1990). "Incentive Policies and Export Performance in Sub-Saharan Africa". World Development, Vol. 18, pp. 383-391

Barnow, B.S., G.G. Cain and A.S. Goldberg (1981) "Issues in the Analysis of Selectivity Bias." In W.E. Stromsdorfer and G. Farkas (eds.), Evaluation Studies Review Annual, Vol. 5, pp. 43-59. Beverly Hills: Sage.

Chhibber, A. (1989). "The Aggregate Supply Response." In S. Commander (ed.). Structural Adjustment and Agriculture. London: Overseas Development Council.

Chhibber, A. (1991). "Africa's Rising Inflation: Causes, Consequences, and Cures." Working Papers WPS 577. Washington DC: The World Bank.

Conway, P. (1991). "How Successful is World Bank Lending for Structural Adjustment." Working Paper WPS 581. Washington DC: The World Bank.

Corbo, V. and S. Fischer (1991). "Adjustment Lending and Bank Support: Rationale and Main Results." Working Paper WPS 582. Washington DC: The World Bank.

Corbo, V. and P. Rojas (1991) "Country Performance and Effectiveness of World Bank-Supported Adjustment Programs." PRE Working Paper Series no. 623, The World Bank, March.

Cottani, J., D. Cavallo, and M. S. Khan (1990). "Real Exchange Rate Behavior and Economic Performance in LDCs." Economic Development and Cultural Change Vol. 39:61-76.

Deng, L. A. (1988), "Economic Recovery Programs: An Overview of the Adjustment Experiences in Africa in the 1980s." Unpublished paper, African Development Bank, Abidjan.

Easterly, W. (1990). "Endogenous Growth in Developing Countries with Government Induced Distortions." Unpublished paper, The World Bank, Washington DC, August.

Economic Commission for Africa (1989). African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation. Addis Ababa, Ethiopia.

Edwards, S. (1988). Exchange Rate Misalignment in Developing Countries. Baltimore, Maryland: The Johns Hopkins University Press.

Edwards, S. (1989). Real Exchange Rates, Devaluation and Adjustment. Cambridge, Massachusetts: The MIT Press.

Edwards, S. (1990). "Real Exchange Rates in Developing Countries: Concepts and Measurements." In T. J. Grennes (ed.) International Financial Markets and Agricultural Trade. Boulder, Colorado: Westview Press. pp. 56-108.

Elbadawi, I. (1992a). "Real Overvaluation, Terms of Trade Shocks and the Cost to Agriculture in Sub-Saharan Africa." Policy Research Working Paper #831, The World Bank, Washington DC.

Elbadawi, I. (1992b). "Macroeconomic Management and the Black Market for Foreign Exchange in the Sudan." Policy Research Working Paper #859, The World Bank, Washington DC.

Elbadawi, I. (1991c). "Economic Performance, and Effectiveness of World Bank-Supported Adjustment Programs in Sub-Saharan Africa." Unpublished paper, The World Bank, Washington DC.

Faini R. and J. de Melo (1990), "Adjustment, Investment, and the Real Exchange Rate in Developing Countries." Working Paper WPS 473. Washington DC: The World Bank.

Faini, R., J. de Melo, A. Senhadji-Semlali and J. Stanton (1990). "Growth Oriented Adjustment Programs: A Statistical Analysis." Working Paper WPS 426. Washington DC: The World Bank.

Frenkel, J. and M. S. Khan (1990). "Adjustment Policies and Economic Development." American Journal of Agricultural Economics Vol. 72:815-20.

Gallagher, M. (1991). Rent-Seeking and Economic Growth in Africa. Boulder, Colorado: Westview Press.

Gastil (1987), Freedom in the World: Political and Civil Liberties. New York: Greenwood Press.

Ghura, D. and T.J. Grennes (1991). "The Impact of the Real Exchange Rate Misalignment on Agricultural Exports and Macroeconomic Performance in Sub-Saharan Africa." Paper presented at the American Agricultural Economics Association annual meetings, Manhattan, Kansas, August 4-7, 1991.

Goldstein, M. and Montiel, P. (1986) "Evaluating Fund Stabilization Programs with Multicountry Data: Some Methodological Pitfalls," IMF Staff Papers. Vol. 33, No. 2, pp. 314-44.

Greene, J. (1989). "The External Debt Problem of Sub-Saharan Africa." Working Paper WP/89/23. Washington DC: International Monetary Fund.

Heckman, J. (1979) "Sample Selectivity Bias as a Specification Error." Econometrica 47:153-61.

Heckman, J. and V. Hotz (1989). "Choosing Among Alternative Nonexperimental Methods for Estimating the Impact of Social Program: The Case of Manpower Training." NBER Working Paper #2861.

Helleiner, G. K. (1991). "Trade, Trade Policy and Economic Development in Very Low-Income Countries". Unpublished paper, Department of Economics, University of Toronto, September.

Helleiner, G. K. (1990). "Structural Adjustment and Long-Term Development in Sub-Saharan Africa". LDA-QEH Development Studies Working Papers, Oxford: International Development Centre, University of Oxford.

Hettige, H., W. F. Steel, and J. A. Wayem (1991). "The Impact of Adjustment Lending on Industry in African Countries." Industry and Energy Department Working Paper, Industry Series Paper No. 45. Washington DC: The World Bank.

Hwa, E. C. (1983). "The Contribution of Agriculture to Economic Growth: Some Empirical Evidence." World Bank Staff Working Paper No. 619. Washington DC: The World Bank.

Jaeger, W. (1991). "The Impact of Policy in African Agriculture: An Empirical Investigation." Working Paper WPS 640. Washington DC: The World Bank.

Jones, C. (1992). "African Adjustment Study: The Issues Paper." Unpublished mimeo, The World Bank, May.

Khan, M. S. (1990). "The Macroeconomic Effects of Fund-Supported Adjustment Programs: An Empirical Assessment." International Monetary Fund Staff Papers Vol. 37, No. 2:195-231.

Khan, M. S. (1986). "Exchange Rate Policies of Developing Countries in the Context of External Shocks." The Pakistan Development Review Vol. 25, No. 3:403-421.

Khan, M. S. and M. D. Knight (1985). Fund-Supported Adjustment Programs and Economic Growth. Occasional Paper No. 41. Washington DC: International Monetary Fund.

Krueger, A. O., M. Schiff, and A. Valdés (1988). "Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economywide Policies." The World Bank Economic Review Vol. 2, No. 3:255-71.

Landell-Mills, P. and I. Serageldin (1991). "Governance and the External Factor." World Bank Annual Conference on Development Economics, Washington, DC, April 25-26, 1991.

Matin, K. M. (1992). "Openness and Economic Performance in Sub-Saharan Africa". Unpublished mimeo, The World Bank, March.

Mkandawire, T. (1989). "Structural Adjustment and Agrarian Crisis in Africa: A Research Agenda," Working Paper 2/89. Dakar, Senegal: Council for Development of Economic and Social Research in Africa.

McFadden, D. (1974). "The Measurement of Urban Travel Demand." Journal of Public Economics 3:303-28.

Ndulu, B. J. (1991). "Growth and Adjustment in Sub-Saharan Africa", in A. Chhibber and S. Fischer (eds.), Economic Reform in Sub-Saharan Africa, a symposium.

Nooter, R. and Roy S. (1990). "Progress on Adjustment in Sub-Saharan Africa: Implications for Future Lending Strategies." Unpublished paper, The World Bank, Washington DC.

Oyejide, T. A. (1986). "The Effects of Trade and Exchange Rate Policies on Agriculture in Nigeria." Research Report No. 55. Washington DC: International Food Policy Research Institute.

Oyejide, T. A. (1990). "Supply Response in the Context of Structural Adjustment in Sub-Saharan Africa." Special Paper No. 1. Nairobi, Kenya: African Economic Research Consortium.

Rojas P. and L. Serven (Forthcoming), "Estimating the Effectiveness of World Bank Adjustment Lending".

Serven, L., and A. Solimano (1991). "Private Investment and Macroeconomic Adjustment in LDCs: Theory, Country Experiences and Policy Implications." Unpublished paper, Macroeconomic Adjustment and Growth Division, The World Bank, Washington DC.

Sharpley, J. (1985). "External Versus Internal Factors in Tanzania's Macroeconomic Crisis: 1973-83." Eastern Africa Economic Review Vol. 1:71-85.

Svedberg, P. (1991). "The Export Performance of Sub-Saharan Africa." Economic Development and Cultural Change Vol. 39, No. 3:549-64.

Summers L. (1992). "The Challenges of Development: Some Lessons of History for Sub-Saharan Africa". Finance and Development, March.

Thomas, V. and A. Chhibber (1989). "Experience with Policy Reforms under Adjustment." Finance and Development (March):28-30.

United Nations Conference on Trade and Development. Commodity Yearbook. (Various issues). New York.

United Nations Conference on Trade and Development (1989). Handbook of International Development and Statistics. New York.

Valdés, A. (1986). "Impact of trade and Macroeconomic Policies on Agricultural Growth: The South American Experience". Economic and Social Progress in Latin America, Washington, DC: Inter-American Development Bank.

Wheeler, D. (1984). "Sources of Stagnation in Sub-Saharan Africa." World Development Vol. 12, No. 1:1-23.

World Bank (1985) Annual Report. Washington DC: The World Bank

World Bank (1981). Accelerated Development in Sub-Saharan Africa: An Agenda for Action. Washington DC: The World Bank.

World Bank (1986). Financing Adjustment with Growth in Sub-Saharan Africa, 1986-90. Washington DC: The World Bank.

World Bank (1988a). Adjustment Lending: An Evaluation of Ten Years of Experience. Policy and Research Series No. 1. Washington DC: The World Bank.

World Bank (1988b). The Challenge of Hunger in Africa: A Call for Action. Washington DC: The World Bank.

World Bank and United Nations Development Program (1989a). Africa's Adjustment and Growth. Washington DC: The World Bank.

World Bank (1989b). Sub-Saharan Africa: From Crisis to Sustainable Growth. Washington DC: The World Bank.

World Bank (1989c). World Development Report 1989. New York: Oxford University Press.

World Bank (1990a). Adjustment Lending Policies for Sustainable Growth. Policy and Research Series No. 14. Washington DC: The World bank.

World Bank (1990b). World Development Report 1990. Oxford, England: Oxford University Press.

World Bank (1990c). World Debt Tables 1989-90. Washington DC: The World Bank.

World Bank (1991a). Special Program of Assistance: Growth, Aid and Debt. Washington DC: The World Bank.

World Bank (1991b). World Debt Tables 1990-91. Washington DC: The World Bank.

World Bank (1991c). World Development Report 1991. Oxford, England: Oxford University Press.

World Bank (1991d). World Tables. Baltimore and London: The Johns Hopkins University Press.

World Resources Institute (1990). World Resources, 1990-91. New York: Oxford University Press.A.1 Macroeconomic Reform

Table 3.1 Growth of Real GNP per Capita in SSA: 1960-89.

	1960-89	1960-70	1970-80	1980-86	1986-89
High Growth Countries					
Botswana*	7.5	2.1	9.8	6.3	6.5
Lesotho	5.5	5.5	9.0	-0.1	-0.1
Burundi	3.8	2.7	2.7	1.4	1.4
Congo*	3.0	1.0	2.2	3.9	-2.8
Swaziland*	3.0	6.2	1.8	0.6	2.5
Seychelles*	2.9	1.2	4.9	-1.2	4.6
Mauritius*	2.6	-0.7	4.8	3.5	6.6
Cameroon*	2.5	-0.1	3.9	4.3	-8.6
Medium Growth Countries					
Kenya	2.3	2.5	2.9	-1.0	1.4
Gabon*	2.0	4.4	4.0	-0.9	-7.2
Cote d'Ivoire*	1.8	5.4	1.7	-3.1	-4.4
Malawi	1.5	2.5	2.4	0.0	0.3
Gambia	1.4	3.3	2.4	-3.0	6.9
Zimbabwe*	1.4	1.2	0.2	-1.0	0.4
Burkina Faso	1.2	0.9	1.3	1.9	0.0
Comoros	1.1	4.0	-1.6	0.5	-3.1
Togo	1.0	5.4	1.6	-4.1	0.4
Low or Negative Growth Countries					
Rwanda	0.9	-0.4	1.2	-0.9	-4.9
Tanzania	0.6	3.2	0.2	-1.8	-0.3
Mauritania	0.4	4.5	-1.2	-2.0	-1.1
Nigeria	0.3	-1.2	2.2	-6.8	-1.8
Ethiopia	0.3	2.0	-0.1	-2.4	1.2
Somalia	0.1	-1.1	2.1	-2.3	-1.2
Benin	0.0	0.5	-0.2	-0.5	-3.3
Central Afr. Rep.	-0.2	0.4	0.1	-0.8	-2.5
Sudan	-0.3	-1.8	1.2	-1.8	-1.4
Senegal*	-0.7	-0.3	0.9	-0.1	-0.3
Zambia	-1.0	2.4	-1.5	-5.6	3.6
Ghana	-1.3	-0.4	-2.1	-2.8	2.0
Chad	-1.3	-1.1	-2.9	5.4	3.3
Madagascar	-1.4	0.5	-1.7	-3.8	-0.6
Zaire	-1.4	1.1	-3.3	-1.6	-2.0
Uganda	-2.0	1.6	-4.7	0.8	2.4
Niger	-2.1	-0.1	-1.3	-6.8	-2.8
Others					
Guinea-Bissau	..	..	-2.5	2.1	2.2
Mali	..	..	2.8	0.4	0.6
Sierra Leone	..	..	-0.9	-0.8	-3.5
Sao Tome/Principe	..	..	3.8	-5.7	-2.3
Sub-Saharan Africa	0.4	0.5	0.9	-1.6	-1.7
South Asia	1.6	1.4	1.2	2.7	3.6
All Low Income Economies	2.6	1.6	2.0	4.1	4.2

* = Middle income countries.

Note: All growth rates were calculated with data from World Bank, World Bank Economic and Social Data Base (BESD) using the Ordinary Least Squares method.

Table 3.2a Real Merchandise Export Growth for SSA and Other Developing Regions.

	1965-80	1980-89
Sub-Saharan Africa	6.1	-0.6
South Asia	2.2	6.2
Latin America and Caribbean	-1.0	3.6
All Low Income Economies	5.6	5.2

Source: World Bank, World Development Report, 1991.

Table 3.2b Share of African Total Exports in World and LDC Exports.

	1950	1960	1970	1980	1985	1988
Share in world exports	3.3	2.9	2.5	2.5	1.7	1.0
Share in LDC exports	10.1	13.4	13.8	12.0	7.1	4.9

Source: UNCTAD, Handbook of International Trade and Development Statistics (1989), Table 1.1, pp. 2-11.

Table 3.2c Growth Rates of Real Agricultural Commodity Exports of SSA and other Developing Regions: 1970-85 Average.

	LDCs	SSA	America	South and South East Asia
All Food Items	2.5	-2.5	2.4	5.3
Agricultural Raw Materials	0.7	-4.0	-0.7	-0.6

Source: Akiyama and Larson (1991), p. 4.

Note: The export series were deflated by World Bank's index of the unit value of manufactured goods.

Table 3.2d World Shares of Agricultural Commodity Exports for SSA and other Developing Regions: 1970-85.

	LDCs	SSA	America	South and South East Asia
	----------(%)----------			
All Food Items				
1970	32.4	7.6	15.6	6.6
1975	29.2	5.1	14.6	7.7
1985	31.5	3.8	15.6	9.6
Agricultural Raw Materials				
1970	30.9	7.2	5.6	15.1
1975	25.2	5.4	4.6	12.8
1985	25.5	3.7	4.5	14.9

Source: Akiyama and Larson (1991), p. 5.

Table 3.2e Share of Major African Commodity Exports in World Exports.

	Average 1970-79 (%)	Average 1980-87 (%)	Percentage change between first and second periods
Cocoa	74.2	65.2	-12.1
Blister Copper	44.7	42.4	-5.1
Coffee	30.3	23.5	-22.1
Cotton	18.4	15.0	-18.5
Tea	17.5	19.6	12.0
Tobacco	9.6	12.3	28.1
Sugar	6.1	5.2	-14.8

Note: The shares were calculated with data from UNCTAD, Commodity Yearbook (various issues).

Table 3.3 Per Capita GNP and External Debt.

Country	GNP Per Capita 1988 US $	Total Debt Per Capita 1988 US $	Debt to GNP Ratio 1988 (%)
Benin	390	237	61
Botswana	1270	429	34
Burkina Faso	230	101	44
Burundi	230	154	67
Cameroon	1010	377	33
Cape Verde	910	378	42
Central African Rep.	390	241	62
Chad	160	64	40
Comoros	440	450	102
Congo	930	2268	244
Cote d'Ivoire	740	1219	165
Ethiopia	120	65	54
Gabon	2970	2473	83
Gambia	220	398	181
Ghana	400	221	55
Guinea-Bissau	160	450	281
Kenya	360	256	71
Lesotho	410	168	41
Liberia	450	680	151
Madagascar	180	320	178
Malawi	160	165	103
Mali	220	259	118
Mauritania	480	1089	227
Mauritius	1810	822	45
Niger	310	249	80
Nigeria	290	279	96
Rwanda	310	95	31
Sao Tome and Principe	280	839	300
Senegal	630	506	80
Seychelles	3800	2338	62
Sierra Leone	240	185	77
Somalia	160	346	216
Sudan	340	499	147
Swaziland	790	360	46
Tanzania	150	191	127
Togo	370	360	97
Uganda	280	119	43
Zaire	170	252	148
Zambia	300	868	289
Zimbabwe	660	287	44
SSA Total	365	334	91

Source: World Bank, World Debt Tables, 1989-90.

Table 3.4 Agricultural Growth Rate: 1965-89.

Country	1965-89
Angola	-2.3
Benin	3.1
Botswana	-0.3
Burkina Faso	2.7
Burundi	1.7
Cameroon	2.0
Cape Verde	0.3
Central African Rep.	2.3
Chad	0.6
Comoros	1.5
Congo	1.6
Cote d'Ivoire	4.3
Ethiopia	1.0
Gabon	2.5
Gambia	-0.8
Ghana	0.4
Guinea	1.6
Guinea-Bissau	2.3
Kenya	3.2
Lesotho	0.8
Liberia	2.7
Madagascar	1.8
Malawi	3.0
Mali	2.7
Mauritania	0.4
Mauritius	0.7
Mozambique	-0.3
Namibia	0.8
Niger	1.0
Nigeria	1.7
Rwanda	3.4
Sao Tome and Principe	-2.6
Senegal	0.4
Sierra Leone	1.0
Somalia	2.2
Sudan	2.6
Swaziland	3.9
Tanzania	2.8
Togo	1.4
Uganda	1.1
Zaire	2.0
Zambia	2.3
Zimbabwe	2.5

		1965-70	1970-80	1980-86	1986-89
SSA Total	1.4	2.1	0.9	1.9	1.7
South Asia	2.6	3.3	2.3	3.1	2.5
All Low-Income Economies	1.7	2.7	1.1	2.5	2.1

Note: All growth rates were calculated with FAO production indices using the Ordinary Least Squares method.

Table 3.5 Social Indicators in SSA and other Developing Regions.

INFANT MORTALITY RATE (per 1000)	1965	1988
Sub-Saharan Africa	160	108
South Asia	147	99
Latin America and Caribbean	95	53
All Developing Economies	117	67

EDUCATION

Primary School Enrollment (percentage of age group enrolled)

	1965	1987
Sub-Saharan Africa	41	68
South Asia	68	89
Latin America and Caribbean	98	108
All Developing Economies	78	104

Secondary School Enrollment (percentage of age group enrolled)

	1965	1987
Sub-Saharan Africa	4	17
South Asia	24	35
Latin America and Caribbean	19	49
All Developing Economies	22	41

DAILY CALORIE SUPPLY (per capita)	1965	1986
Sub-Saharan Africa	2092	2096
South Asia	2060	2228
Latin America and Caribbean	2457	2700
All Developing Economies	2116	2507

Source: World Bank, World Development Report, 1990.

Table 4.1 The Population Growth Rates in SSA and other Developing Regions.

	1965-80	1980-88
Sub-Saharan Africa	2.3	3.2
South Asia	2.4	2.3
Latin America and Caribbean	2.5	2.2
All Developing Countries	2.3	2.0

Source: World Bank, World Development Report, 1990.

Table 5.1: Initial Conditions (Period Average: 1970-1980)

	External debt as % of GDP	Debt Service as % of exports	Real effective exch.rate	Fiscal deficit as % of GDP	Resource balance as % of GDP	Annual avg. rate of inflation	Real GDP growth	Domestic savings as % of GDP	Investment as % of GDP	Exports as % of GDP
EIAL										
LIC	46.5	8.7	97.9	9.0	-5.9	13.5	4.0	16.9	22.8	29.1
SSA	33.1	7.7	93.8	6.6	-10.6	14.9	3.7	16.1	24.7	30.2
OAL										
LIC	39.7	6.2	98.7	9.1	-10.2	13.7	3.2	8.1	18.3	18.0
SSA	26.3	5.5	93.1	3.6	-13.6	14.8	3.2	6.4	20.5	21.0
NAL										
LIC	23.8	6.7	97.5	4.6	-7.8	10.5	4.1	9.7	17.5	19.0
SSA	23.5	3.8	98.0	2.4	-10.1	10.9	6.0	12.8	21.1	30.2

Table 5.2: Selected Indicators of Policy Stance

	Real effective exchange rate				Ratio of fiscal deficit to GDP			
	1970-80	1981-82	1983-84	1985-88	1970-80	1981-82	1983-84	1985-89
EIAL								
LIC	97.9	116.5	111.5	83.5	9.0	9.8	7.4	5.7
SSA	93.8	120.3	126.3	88.5	6.6	10.7	7.3	5.8
OAL								
LIC	98.7	104.3	111.7	81.2	9.1	8.8	9.8	8.2
SSA	93.1	106.8	108.8	94.4	3.6	6.8	7.5	9.0
NAL								
LIC	97.5	105.6	114.5	106.4	4.6	7.7	8.5	7.7
SSA	98.0	106.7	117.2	123.7	2.4	7.5	11.1	8.2
	Ratio of Imports to GDP				Ratio of resource balance to GDP			
	1970-80	1981-82	1983-84	1985-88	1970-80	1981-82	1983-84	1985-89
EIAL								
LIC	38.6	33.5	29.8	31.9	-5.9	-9.2	-4.1	-4.2
SSA	40.8	36.1	32.1	34.2	-10.6	-8.4	-4.5	-5.3
OAL								
LIC	35.5	36.9	35.0	30.8	-10.2	-16.8	-15.2	-10.6
SSA	34.7	38.4	37.0	30.9	-13.6	-18.7	-17.5	-11.8
NAL								
LIC	32.9	34.8	29.5	27.4	-7.8	-16.1	-10.0	-4.2
SSA	40.3	40.5	33.7	32.7	-10.1	-8.6	0.2	-2.3

Table 5.3: External Shocks

	1981-84 compared to 1970-80			1985-89 compared to 1970-80			1985-89 compared to 1981-84		
	Terms of Trade	Real Int. Rate	Total Shock	Terms of Trade	Real Int. Rate	Total Shock	Terms of Trade	Real Int. Rate	Total Shock
EIAL									
LIC	-10.6	-2.0	-12.6	-14.0	-3.2	-17.2	1.6	-0.5	1.1
SSA	-13.6	-1.8	-15.4	-13.4	-3.4	-16.8	1.7	-0.6	1.1
OAL									
LIC	-8.6	-1.6	-10.2	-9.7	-3.6	-13.3	-1.7	-0.8	-2.5
SSA	-6.9	-1.4	-8.3	-9.8	-3.2	-13.0	-2.5	-0.8	-3.3
NAL									
LIC	-18.7	-0.9	-19.6	-9.5	-2.0	-11.5	3.1	-0.6	2.5
SSA	-15.3	-1.1	-16.4	-8.5	-2.3	-10.8	6.7	-0.7	6.0

Notes: The total effect of external shocks as % of GDP is computed as the sum of real interest rate effect and the terms of trade effect. The interest rate effect is calculated as $-(r-r_{base})*(debt/GDP)_{beg}$, where r is the real interest rate computed as $(i-dp/p)/(1+dp/p)$; r_{base} is the average real interest rate of the base period; it is the ratio of interest payments to total debt; interest payments are calculated by adding public interest payment to private interest payments; private interest payments are proxied by multiplying private debt by L (L equals three-month annualized LIBOR plus one percent); the private debt is estimated by subtracting public and publicly guaranteed debt from total debt; dp/p is "world" inflation (proxied by the percentage change of the GNP deflator of the US), and (debt/GDP)beg is the ratio of debt to GDP of the year preceding the beginning of the end period. Debt data correspond to total disbursed guaranteed and nonguaranteed debt.
The effect of terms of trade is computed as $[(PX/PX_{base})-1)*(X/GDP)_{beg}]-[(PM/PM_{base})-1)*(M/GDP)_{beg}]$, where PX and PM are the average export and import price indices deflated by the US GNP deflator, respectively; PX_{base} and PM_{base} are the average price indices of the base period; X and M are exports of GNFS and imports of GNFS; and $(X/GDP)_{beg}$ and $(M/GDP)_{beg}$ are the ratios of X and M to GDP respectively of the year preceding the beginning the end period. All the variables are denominated in current US dollars.

Table 5.4: Country Performance

	Real GDP growth			Investment to GDP			Domestic Saving to GDP		
	1970-80	1981-84	1985-89	1970-80	1981-84	1985-89	1970-80	1981-84	1985-89
EIAL									
LIC	4.0	0.1	3.7	22.8	18.4	16.2	16.9	11.8	10.2
SSA	3.7	0.1	3.7	24.7	18.4	16.9	16.1	9.9	11.0
OAL									
LIC	3.2	2.1	3.2	18.3	19.3	19.7	8.1	3.3	7.7
SSA	3.2	3.1	3.0	20.5	21.5	18.7	6.4	5.9	5.3
NAL									
LIC	4.1	3.1	2.2	17.5	19.1	17.7	9.7	6.0	10.2
SSA	6.0	4.5	2.3	21.1	18.2	17.3	12.8	10.6	15.0
	Exports to GDP			Export Shares			Inflation		
	1970-80	1981-84	1985-89	1970-80	1981-84	1985-89	1970-80	1981-84	1985-89
EIAL									
LIC	29.1	27.3	28.2	3.4	3.2	..	13.5	51.6	170.4
SSA	30.2	27.7	29.6	3.5	4.0	..	14.9	21.0	15.0
OAL									
LIC	18.0	19.4	19.2	0.8	2.3	..	13.7	22.6	23.5
SSA	21.0	19.6	18.5	0.8	0.7	..	14.8	24.5	24.6
NAL									
LIC	19.0	18.1	23.0	2.2	2.4	..	10.5	7.7	6.7
SSA	30.2	32.9	30.3	0.9	0.7	..	10.9	8.3	5.0

Table 5.5: Index of Political Pluralism

		1971-80	1981-84	1985-86
EIAL				
	LIC	5.1	5.1	5.1
	SSA	5.2	5.0	5.4
OAL				
	LIC	5.7	5.7	6.0
	SSA	6.0	5.9	6.2
NAL				
	LIC	5.1	5.4	5.3
	SSA	5.4	5.6	5.6

Notes: The index is a simple average of two indeces on political rights and civil liberties as reported in Gastil (1987) The political rights index measures the extent of a fully competitive electoral process. The civil liberties index measures the extent of freedom of expression of rational political opinion. In each scale a rating of (1) is the most free and (7) the least free.

Table 5.6
Maximum Likelihood Probit Estimates of the Status Participation Equation
Low-Income Countries

Variable	Coefficient	Std. Error	t-Stat	2-Tail Sig.
GDP2	-18.073	10.984	-1.645	0.109
GDI21	-11.455	5.295	-2.164	0.037
POL2	-0.230	0.132	-1.736	0.091
DEBT21	3.024	1.617	1.869	0.070
EXT21	-2.111	1.719	-1.228	0.228
INFL2	2.000	1.125	1.777	0.084
X2	-2.456	2.213	-1.110	0.275
DEF21	8.235	7.604	1.083	0.286
LAC	-6.002	3.893	-1.541	0.132
ASIA	0.979	0.964	1.015	0.317

Note: Log likelihood = -15.497 ; pseudo R squared = 0.48

Table 5.7
Maximum Likelihood Probit Estimates of the Status Participation Equation
Sub-Saharan Africa

Variable	Coefficient	Std. Error	t-Stat	2-Tail Sig.
GDP2	-18.695	8.856	-2.111	0.043
GDI21	-8.381	4.272	-1.962	0.059
DEBT21	2.338	1.186	1.971	0.058
REER2	0.012	0.008	1.473	0.151
POL2	-0.452	0.205	-2.202	0.035

Note: Log likelihood = -12.496 ; pseudo R squared = 0.47

Table 5.8
Modified Control Group Estimates of Structural Adjustment Program

Comparing period 3 (1985-89) to period 2 (1981-84)

	LIC	SSA
Change in GDP growth	0.010	-0.014
	(1.733) ***	(-0.830)
Change in ratio of exports to GDP	0.026	0.080
	(1.570) ****	(2.459) *
Change in ratio of GDI to GDP	-0.053	-0.084
	(-1.906) **	(-2.314) *
Change in ratio of GDS to GDP	-0.017	-0.083
	(-0.691)	(-1.574) ****
Change in inflation	0.026	0.122
	(0.383)	(1.244) ****

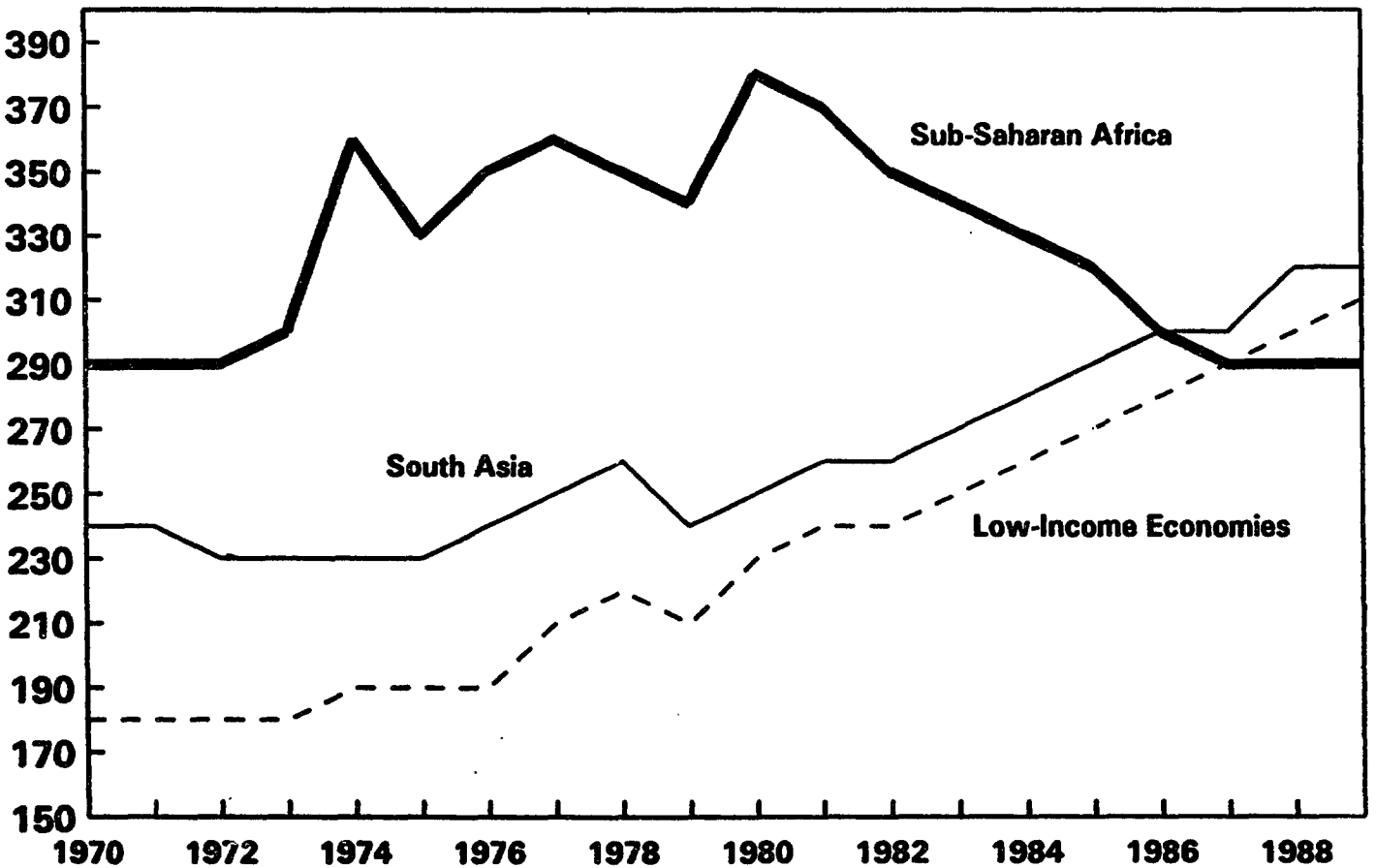
t statistics in parentheses

* Statistically significant at the 5% level
** Statistically significant at the 6.5% level
*** Statistically significant at the 9% level
**** Statistically significant at the 12% level
***** Statistically significant at the 22% level

Figure 3.1

Gross National Income Per Capita

1987 Constant Dollars

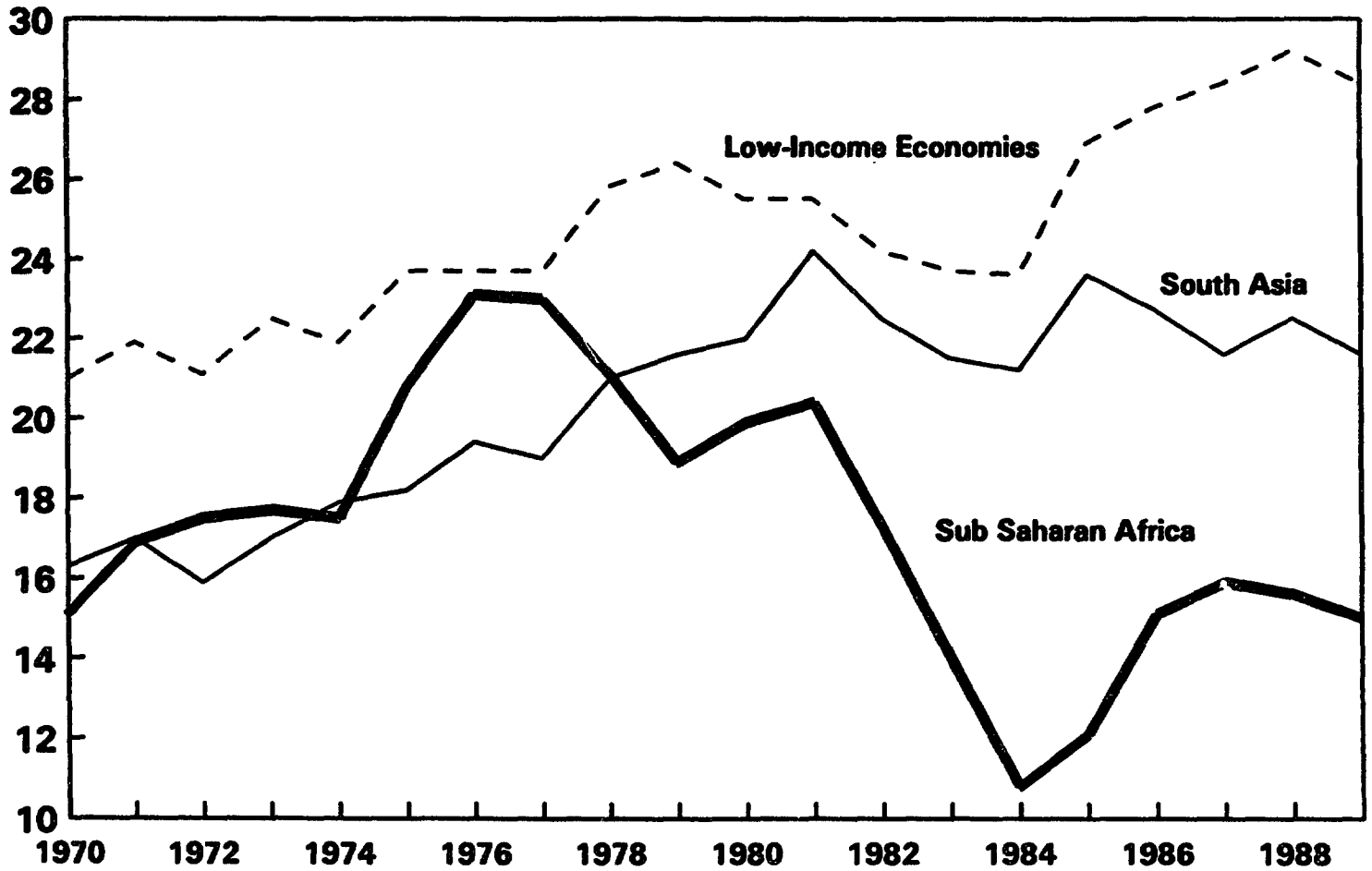


Source: World Bank, World Tables 1991

Figure 3.2

Gross Domestic Investment

Percentage of GDP

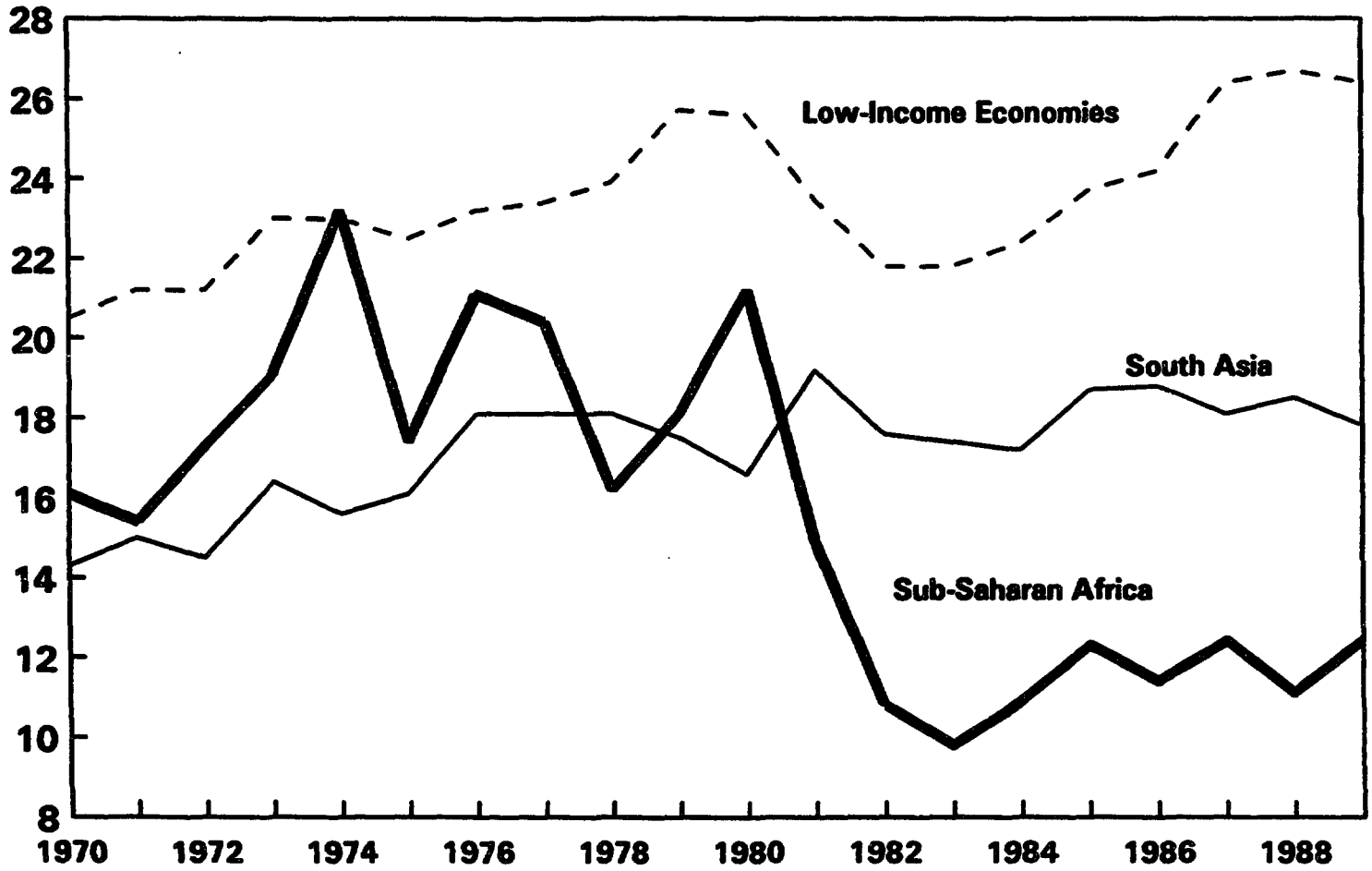


Source: World Bank, World Tables 1991

Figure 3.3

Gross Domestic Saving

Percentage of GDP

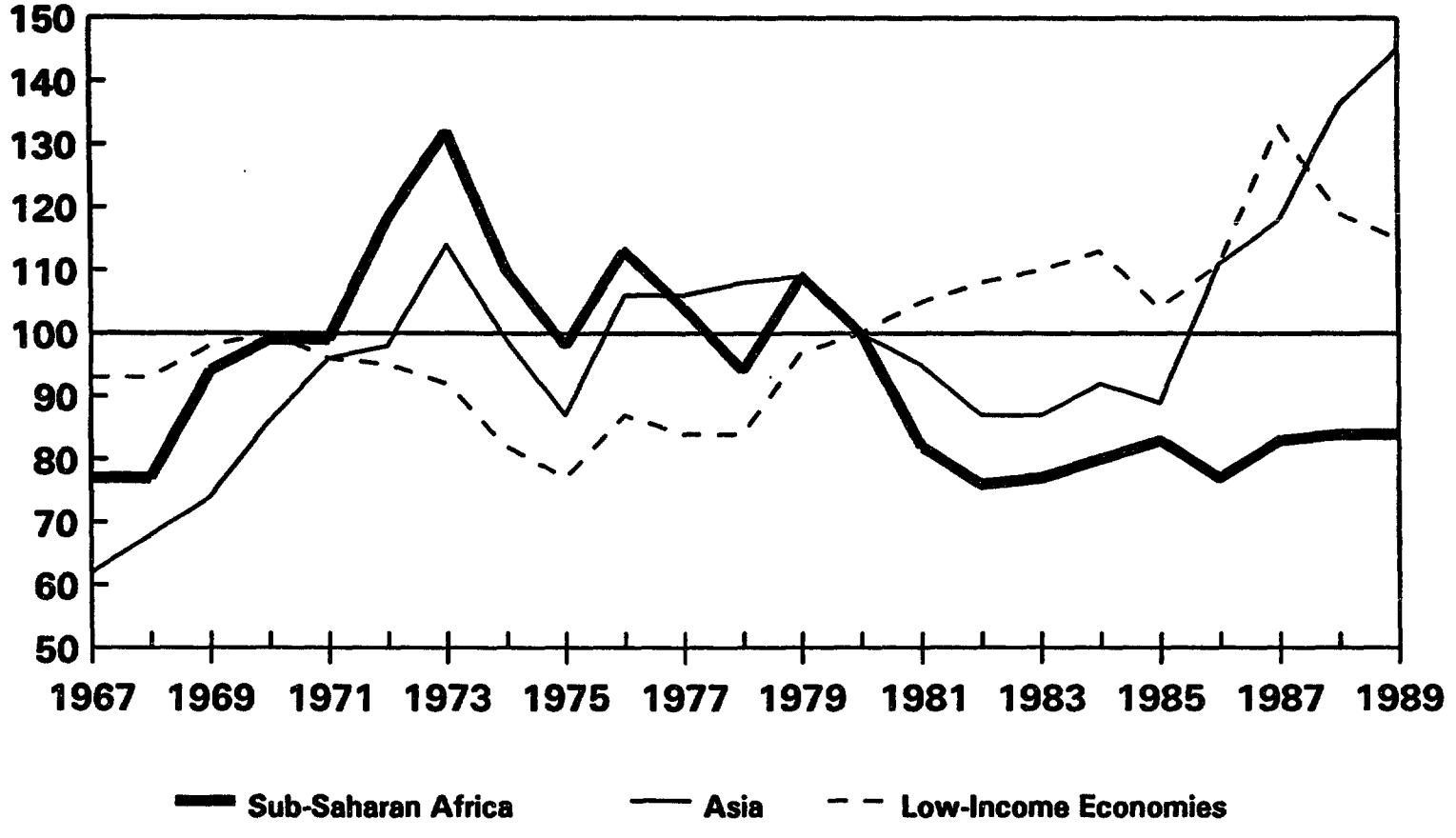


Source: World Bank, World Tables 1991

Figure 3.4

Export Volume

Index: 1980 = 100

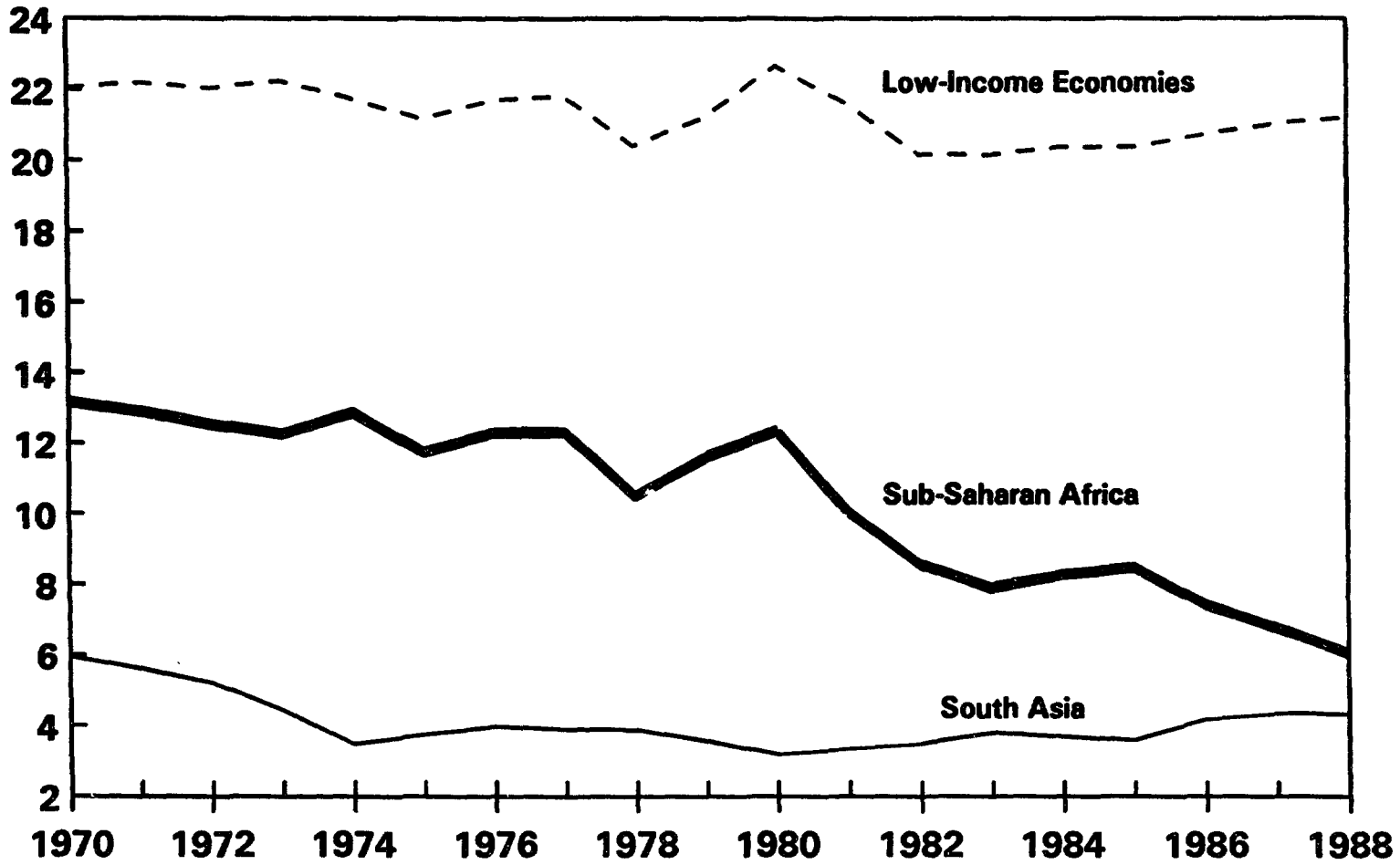


Source: UNCTAD Handbook of International Trade and Development 1989

Figure 3.5

Merchandise Export Share

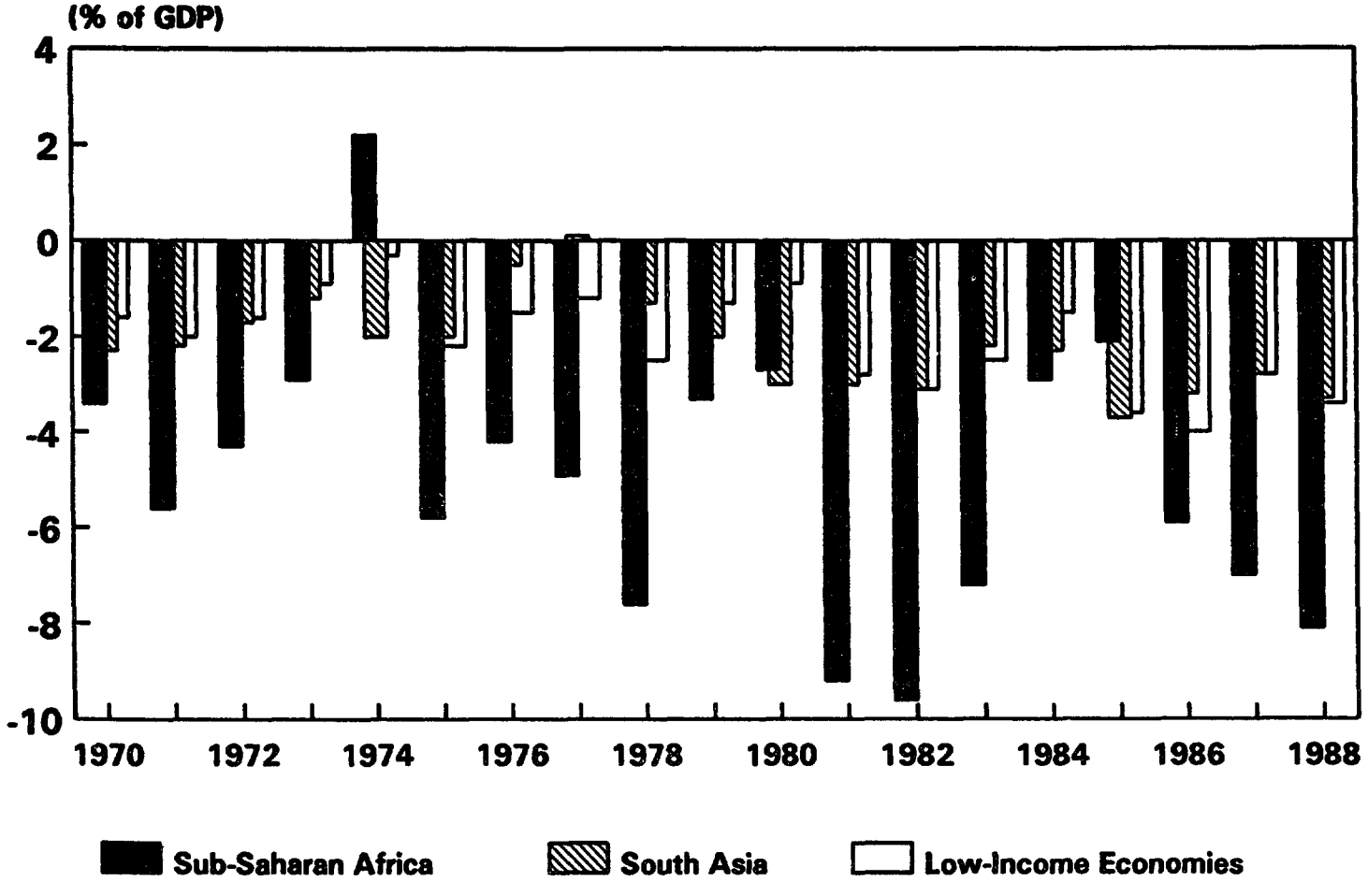
Percentage of LDC Merchandise Exports



Source: World Bank, World Tables 1991

Figure 3.6

Current Account Balance

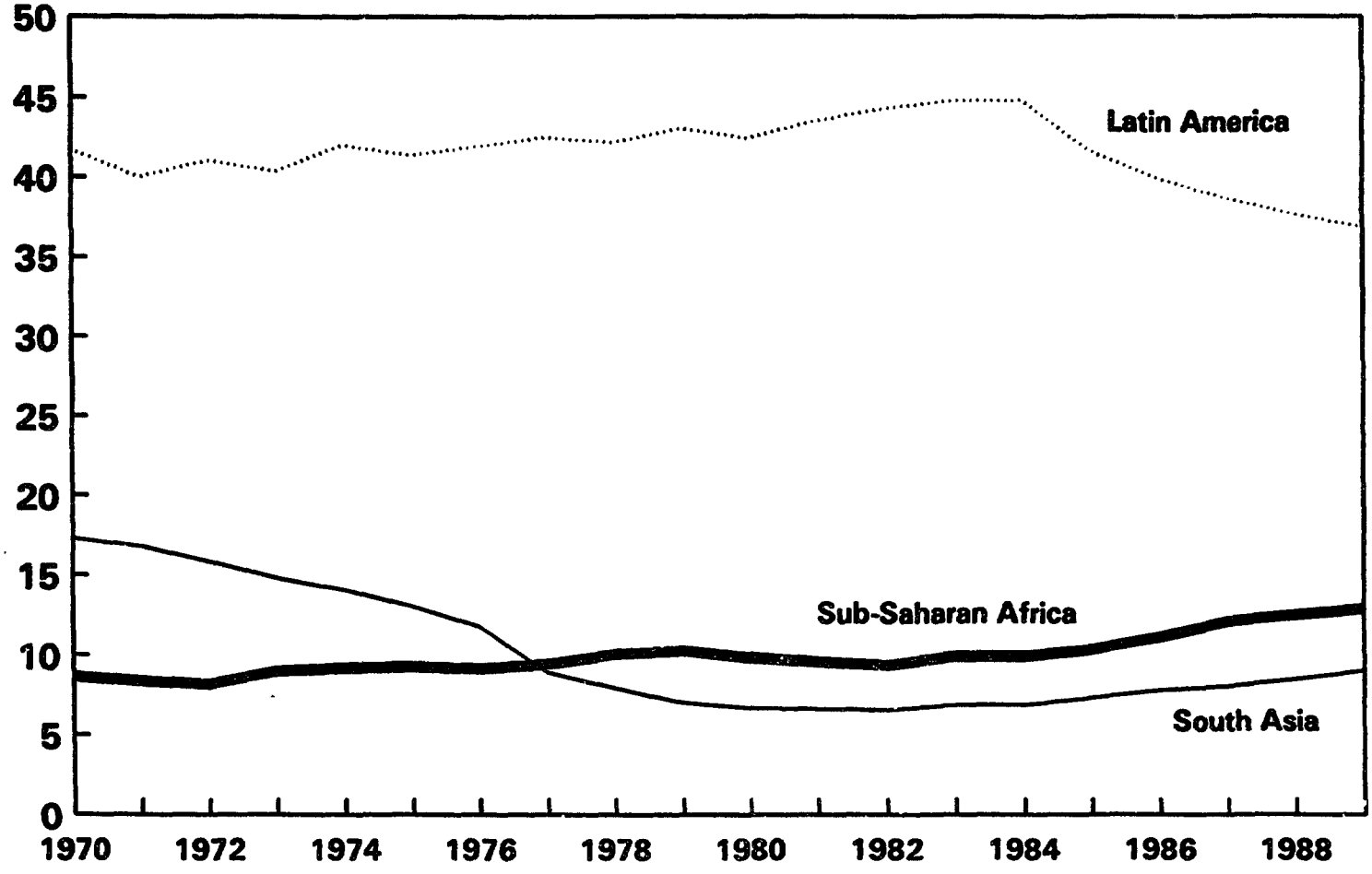


Source: World Bank, World Tables 1990

Figure 3.7

Total External Debt

Percentage of Total LDC Debt

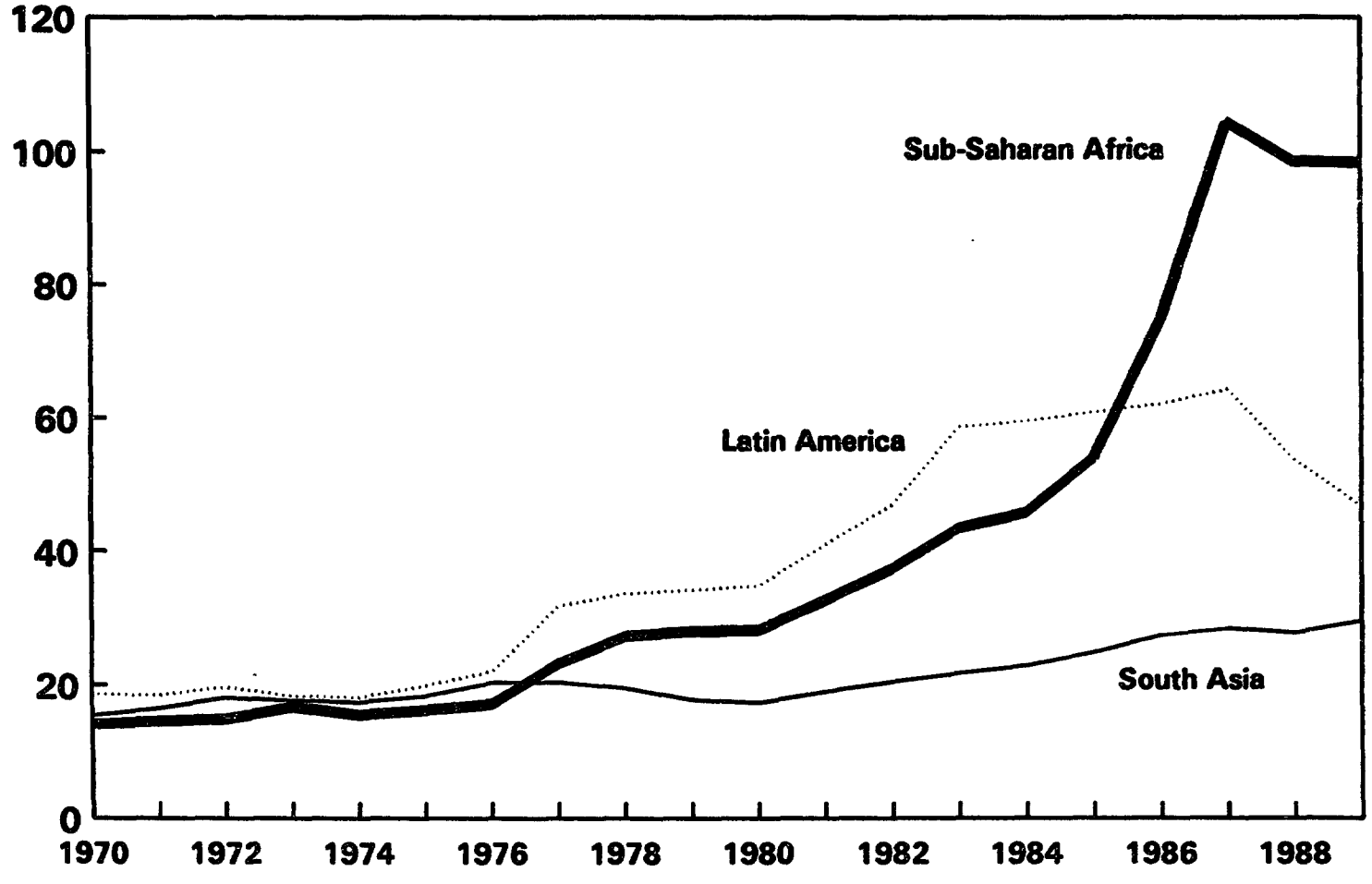


Source: World Bank, World Debt Tables (various issues)

Figure 3.8

Total External Debt

Percentage of GNP

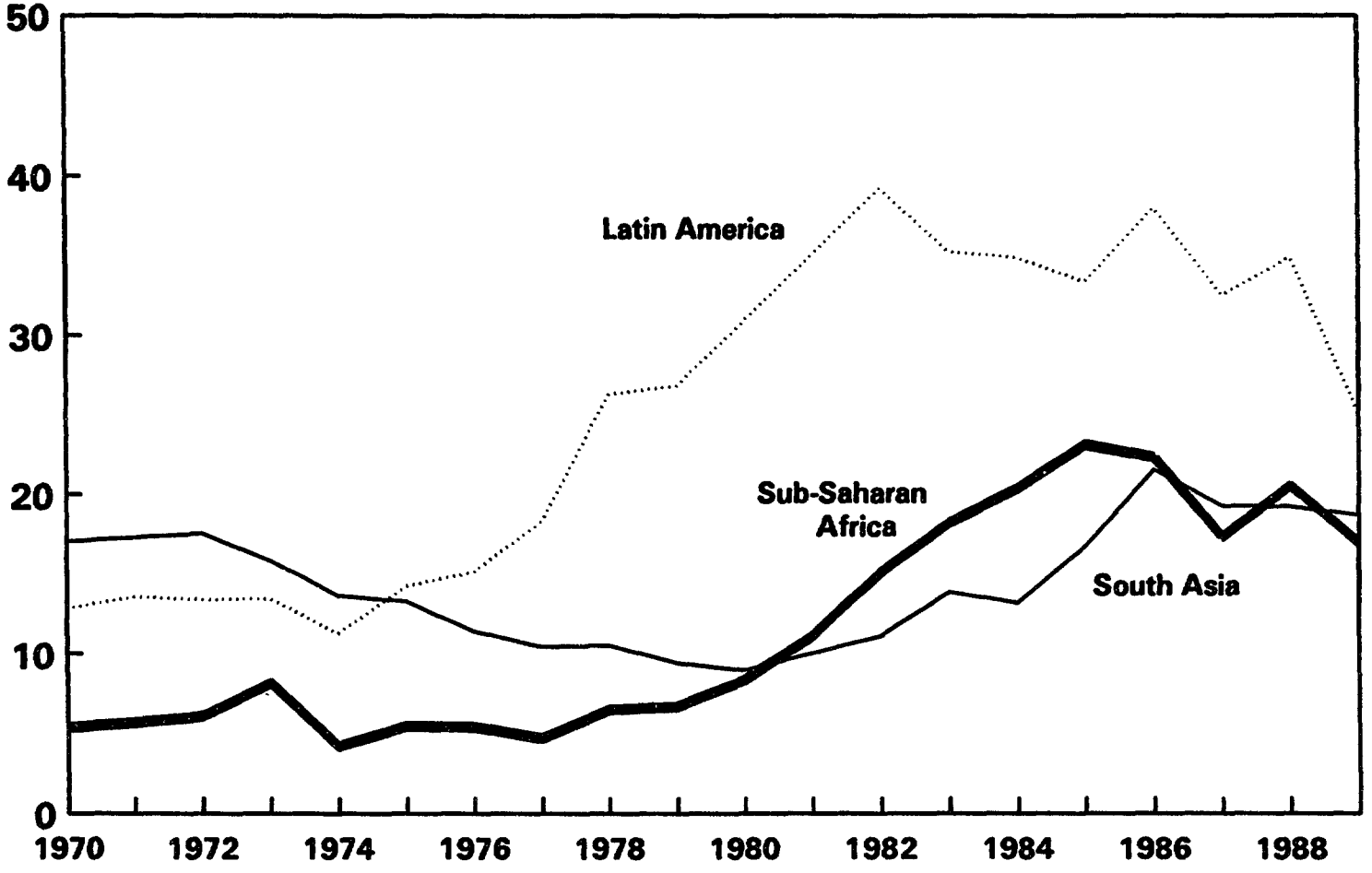


Source: World Bank, World Debt Tables (various issues)

Figure 3.9

Debt Service

Percentage of Exports

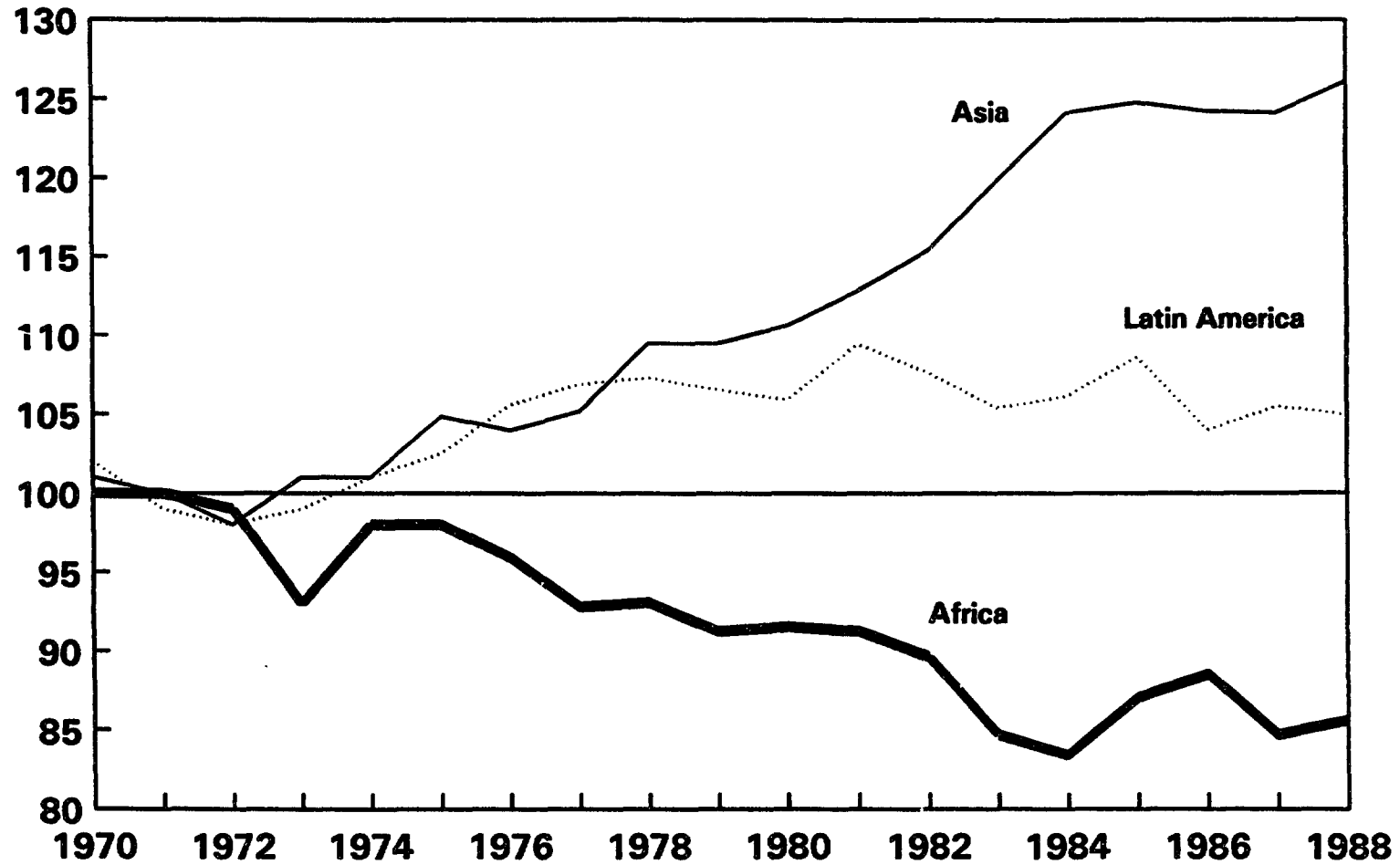


Source: World Bank, World Debt Tables (various issues)

Figure 3.10

Per Capita Food Production

1969-71 = 100

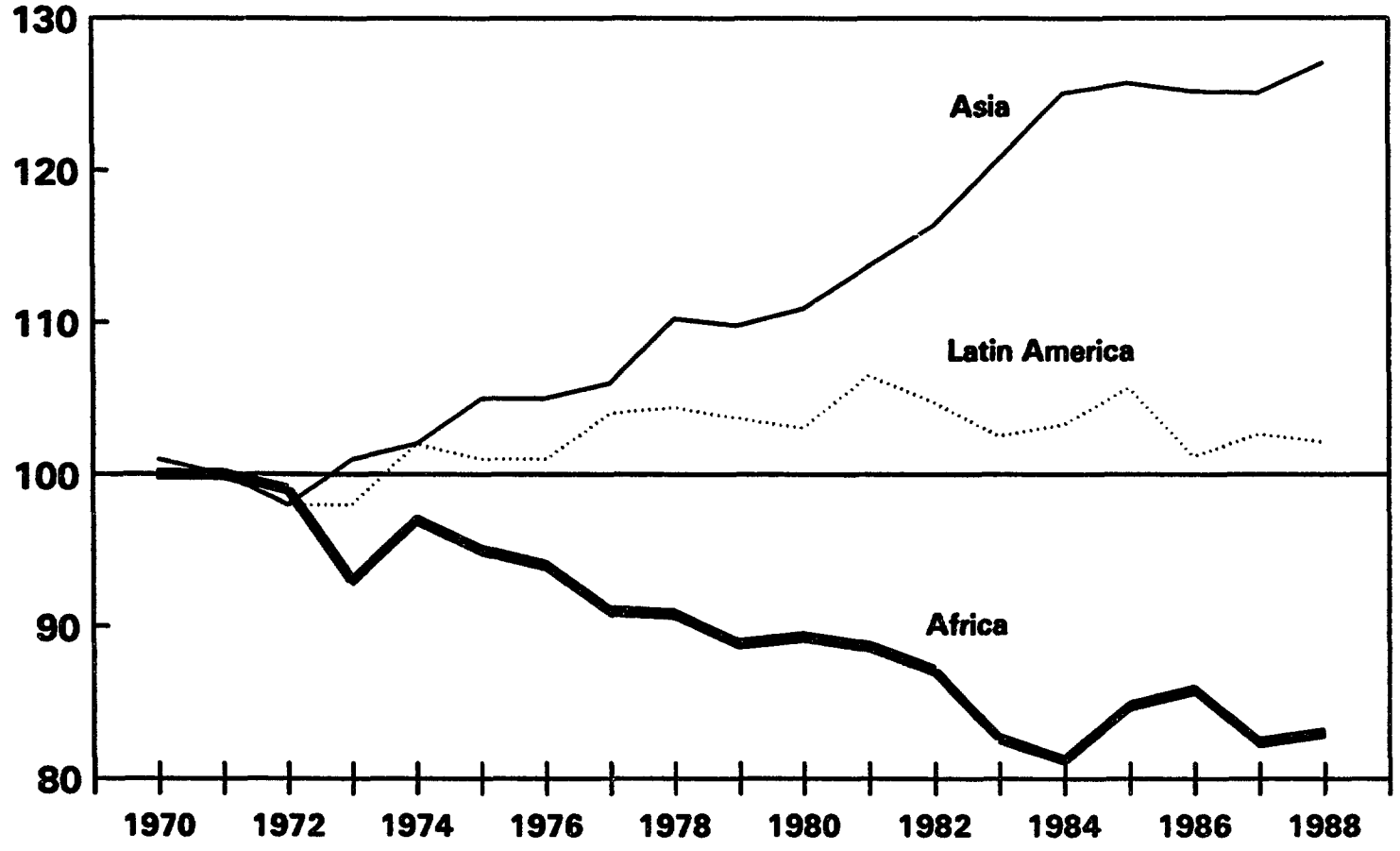


Source: FAO, Production Yearbook (various issues)

Figure 3.11

Per Capita Agricultural Production

Index: 1969-71 = 100

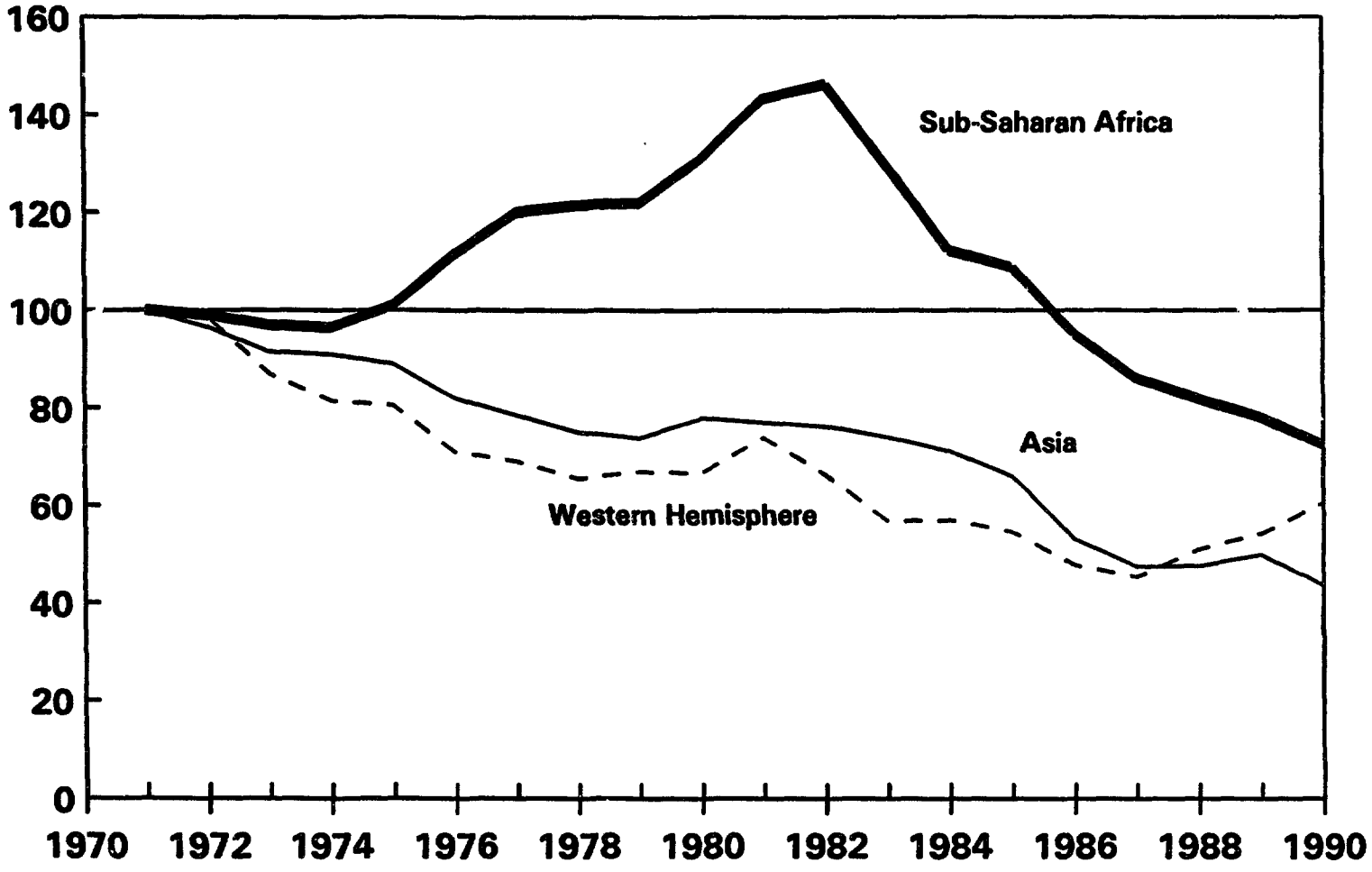


Source: FAO, Production Yearbook (various issues)

Figure 4.1

Real Effective Exchange Rate

Index: 1971 = 100



Source: World Bank and IMF

Figure 4.2

REER and Export Volume in SSA

Index: 1971 = 100

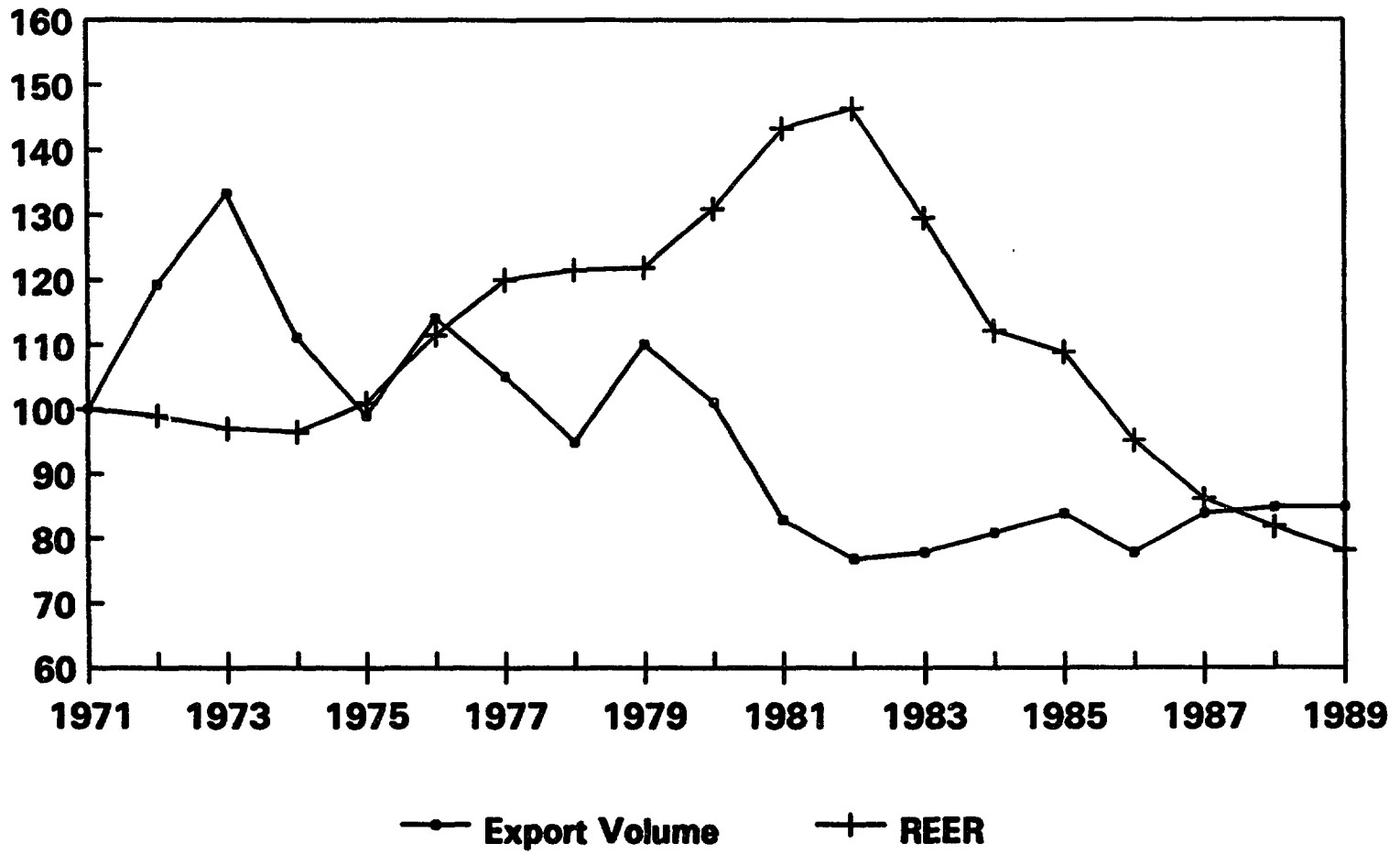
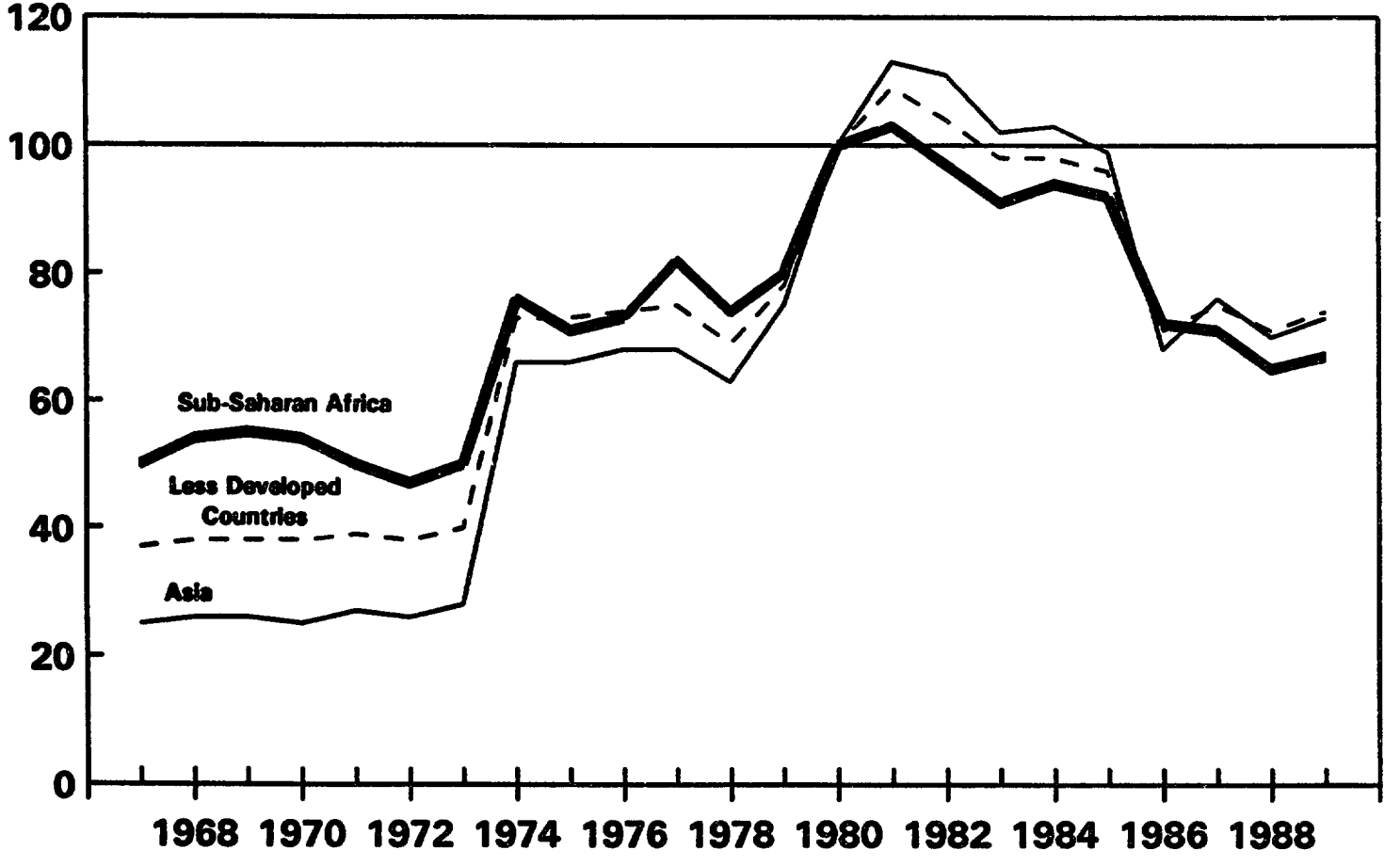


Figure 4.3

Terms of Trade

Index: 1980 = 100



Source: UNCTAD Handbook of International Trade and Development 1989

APPENDIX A: CAUSES OF THE CRISIS IN SUB-SAHARAN AFRICA

Following up on the discussion of section 4, we provide here a more detailed account of the structuraiist and the neoclassical positions followed by a detailed synthesis based on recent empirical evidence including the one obtained in this paper (section 5 above).

A.1 Neoclassical View

Mkandawire (1989) notes that "neoclassical interpretation is based on the theoretical and empirical corpus of work that essentially derived from a set of theories on the efficacy of the market system in resource allocation, p. 5." The proponents of the "inappropriate domestic policies" behind the economic and agrarian crisis in Africa make use of solid neoclassical economic foundations to back their views. They believe in the existence of well-behaved production functions with factor substitution possibilities and in the power of the markets and price signals to efficiently allocate scarce resources. They also believe in international trade based on comparative advantage and outward-oriented trade strategies. Hence, they argue that state interventionism, by the use of non-price mechanisms to allocate scarce resources, and especially through import substitution has crippled long-term growth prospects in SSA. The vagaries of weather come and go and commodity price behavior is more or less predictable. However, the adverse effects of chronic policy failures are long-lasting. Economic agents (including peasants) are rational decision makers. They can weigh the relative effects of the vagaries of weather, declining commodity prices and direct and indirect taxation of their output and make their production decisions accordingly.

According to the neoclassical view, African governments have pursued inappropriate policies which have seriously undermined overall economic performance in general and agricultural sector performance in particular. The latter has been directly biased against in the following ways:

- Agricultural export commodities have been taxed at high rates and farmers have received lower prices for their products from inefficiently run state marketing boards.
- The use of widespread import duties and quotas to conserve foreign exchange have forced farmers to pay higher prices for imported inputs or to purchase higher cost domestic substitutes for agricultural inputs.
- The protection of domestic industrial sector and import-substitution industries through import tariffs, quotas and licenses have led to relatively high prices for the products of these sectors and hence to a deterioration of the internal terms-of-trade for agriculture.
- Typically, since independence, governments have given agriculture a low priority in their development strategy by allocating inadequate investment funds for agricultural

research, construction of roads, marketing infrastructure and the provision of schools and health facilities in rural areas.

- In many countries a direct policy of cheap food (both imported and domestic) for the urban population has encouraged a preference for imported food and discouraged domestic food production.

In addition to these direct effects, agriculture has been adversely affected by overvalued real exchange rates. The real exchange rate measures the internal real terms-of-trade between traded and non-traded goods. An overvaluation of the real exchange rate causes a diversion of resources away from the tradables sector to the non-tradables sector of the economy. It is now widely accepted that the real exchange rate plays a critical role in the profitability of both export-oriented and import-competing agriculture (e.g., Elbadawi 1992a). The real exchange rate is perhaps the most influential relative price affecting incentives in the agricultural sector, given that the latter is highly open to foreign trade. The real exchange rate itself is affected by macroeconomic, nominal exchange rate and trade policies, policies affecting capital movements (including reserve changes, and foreign borrowing and assistance), and by economic fundamentals (such as the international terms-of-trade). Overexpansionary monetary and fiscal policies, excessive inward-oriented trade strategies and policies which encourage excessive net capital inflows cause the real exchange rate to appreciate. Overexpansionary monetary and fiscal policies cause the domestic credit to expand beyond what is necessary to sustain nominal devaluations, foreign inflation and real output growth. The effect of excess domestic credit is to induce inflation and cause an appreciation of the real exchange rate.

Overvalued real exchange rates bias against export and import-competing agriculture in a number of important ways:

- Overvalued real exchange rates act as an implicit tax on tradables and hence discourages their production. Resources shift to the production of non-tradable goods. If the overvaluation of the real exchange rate is chronic as it has been in many African economies, it becomes very costly to move resources back to the tradables sector once policy actions are taken to correct the overvaluation.
- Overvalued real exchange rates make food imports (such as wheat and rice) cheaper than locally produced staples (such as maize, millet, sorghum, roots, cassava, tuber and pulses) and hence can shift consumers' taste in favor of foreign foodstuff. The demand for domestically grown import-competing substitutes falls depressing their prices and hence lowering domestic production.

- Since overvaluation of the real exchange rates discourages the exports of agricultural commodities, export earnings are diminished. This undermines the ability of nations to generate sufficient foreign exchange to import food, raw materials, capital goods, and spare parts. Hence, capacity in the tradables sector is adversely affected. And since export growth fosters economic growth, poor export performance, in turn, slows growth.
- Overvaluation of the real exchange rate can adversely affect agriculture through its effects on labor movements (Oyejide 1986, pp. 43-44). Overvaluation makes the non-tradables sector more profitable and hence induces a movement of labor away from agriculture. A fall in labor supply in agriculture puts upward pressure on labor costs and raises overall production cost to agriculture. A fall in internal terms-of-trade for agriculture and an increase in the costs of production reduce profitability in agriculture.

Both direct and implicit taxation of agriculture have kept agricultural production at sub-optimal levels for extended periods of time and have impaired agricultural growth. Given the important positive interlinkages between the agricultural sector and overall economic performance (Hwa 1983), aggregate economic growth has in turn suffered. A competitive real exchange rate is necessary for the expansion of agricultural exports and the prevention of balance of payments crises.

A.2 Structuralist View

The "structuralists" have identified a set of poor initial conditions and a set of "structural bottlenecks" to explain the economic malaise facing almost all African states. These poor initial conditions which are said to have provided SSA with an unfair departure at independence relative to other developing regions are the following:

- At independence, there was an extreme scarcity of adequately trained local managers, scientists and other manpower who understood the resource base available for development and how to best use and manage that limited resource base for maximizing welfare.
- Many independent states were politically fragile due to the diversity of cultural background of the people. In many instances, the existing governments spent much of their scarce resources fighting for their political survival instead of focusing on development strategies to enhance welfare.

- At independence, both the infrastructure and the institutions were very weak to support development. In many instances, there were a few major roads or railway networks for the entire country, often linking the main areas of production and the main harbor. The infrastructure to support educational, agricultural research, extension programs and the legal systems were weak and almost nonexistent. Also, the colonizers did very little to establish democratic institutions.
- The colonial heritage left African states a legacy of heavy external dependence on one or two export crops for their economic survival. These cash crops were subject to the vagaries of international prices and unequal terms of exchange with the industrialized world.

In addition to these poor initial conditions, a long list of structural bottlenecks (which have impaired the ability of independent African countries to grow rapidly) has been identified as:

- widespread subsistence farming and the predominance of subsistence activities;
- shortage of trained personnel and scarcity of entrepreneurial capabilities to spearhead and manage development;
- weak institutions;
- inappropriate technology and traditional production techniques marked by low levels of productivity;
- low levels of scientific and technological knowledge and application;
- development with an urban bias;
- small and fragmented economies;
- poor physical infrastructure and transportation networks constraining the integration of various regions of a country;
- weaknesses in political structures of African countries in which the interests of the dominant class are served at the expense of the peasant masses;
- excessive dependence on the foreign sector rendering the African economies extremely susceptible to external shocks;
- colonial influence marked by "too much" dependence of the African manufacturing sector on imported factor inputs such as capital, skilled manpower, technology as well as spare parts and raw materials;
- poor weather and prolonged periods of drought; and
- poor soil quality and a degraded environment.

These structural rigidities are blamed for the poor economic performance in SSA since they impose constraints on the ability of farmers and entrepreneurs to respond effectively to price incentives.

A.3 A Synthesis

A.3.1 Political Factor

The arbitrary division of the African continent by the European colonial powers has not helped many of the "resulting" countries in their quest for nation-building. In many instances, boundaries were drawn in ad hoc ways without regard to the ethnic origins of the people for whom the nations were built. As a consequence, after independence many ruling governments (with lack of popular legitimacy) have had to rule by force to suppress the political and/or secessionist ambitions of rival groups. Also, political instability triggered by political coups has been prevalent in Benin, Ghana, Nigeria, Sierra Leone, Uganda and Upper Volta. Ethnic violence has continuously erupted in Benin, Burundi, Congo, Ethiopia, Nigeria, Somalia, Rwanda, Uganda and Zaire. Furthermore, in countries such as Angola, Chad, Ethiopia, Nigeria, Sudan and Zaire, civil wars have severely disrupted economic activities. More than two-thirds of Africa's hungry live in countries involved in heavy fighting (Ethiopia, Sudan and Somalia) and civil wars (Angola, Mozambique and Liberia). About half of the people who lack access to enough food for an active and healthy life in SSA live in countries (such as Ethiopia, Nigeria, Zaire, Uganda and Mozambique) involved in conflicts (World Bank 1988b).

Countries which have been involved in conflicts for protracted periods of time (Angola, Mozambique, Ethiopia, Sudan, Zaire, Ghana, Uganda and Nigeria) have been among the worst economic performers in the region. Conflicts and political instability have adverse effects on economic performance for several reasons. The limited financial and human resources are diverted to military use and away from the production of civilian goods and services. The preoccupation of governments in periods of instability is more with strategies to stay in power than with economic management and the welfare of the average citizen. In addition, the lack of security for life and property lowers productive investment and affect production adversely. Internal strife and civil wars have driven peasants away from their land, so that food production has suffered.

In many countries in SSA the economic and agrarian crisis and the accompanying hunger and famine have been caused more by bad economic policies and chronic internal civil wars and strife (man-made factors) than by the vagaries of weather (natural factors). However, in the past year or so, there appears to be a wave of change towards democracy in SSA. Throughout the region there is pressure for governments to be more accountable of their actions. There is a growing demand for

political pluralism and democratization. Many countries have witnessed popular protests demanding political reform and accountability. In Benin, Cape Verde, Mali and Sao Tome/Principe there has been major steps towards democratization of the political systems. In many other countries (such as Ivory Coast, Congo, and Zaire) there are growing pressures for economic and pluralistic reforms and democratization. In a recent speech by the outgoing chairman of the OAU, President Museveni (of Uganda) noted that democracy is an indispensable prerequisite for development because it is the only way to stamp out corruption and promote economic growth. The ECA also views steps towards democratization as an important prerequisite for the resumption of economic growth.

A.3.2 Lack of Export Diversification

Most countries in SSA are heavily dependent on one or two commodities for their export revenues and economic livelihood. It is not uncommon for a few commodities to account for more than 50 percent of merchandise export revenues in certain countries -- coffee and cocoa in Cote d'Ivoire; coffee in Burundi and Uganda; and tobacco and tea in Malawi. There are many reasons for this lack of diversification of African commodities. It has been argued that the agricultural and import policies of the western industrialized countries are to be blamed to some extent for the slow growth and failure of countries in SSA to successfully diversify their economies. Tariffs and non-tariff barriers to trade by western industrialized countries have not helped African countries to diversify their economies into higher-value added and semi-processed agricultural goods. Many non-tariff barriers (such as quotas, voluntary export restraints, variable levies, minimum price systems, countervailing taxes and duties) affect in a progressive way the entry price of processed commodities. Such barriers discourage local processing of agricultural goods into higher value-added products.

It remains imperative that governments of industrial countries grant exporters from LDCs better access to their markets. Commodity exporters would gain if industrial countries reduced or removed the protective structure against processed commodities. There is a high desirability for non-tariff barriers to be dismantled. A change in the access of developing country exports to industrial country markets in the future will depend to a large extent on the success of the Uruguay Round of trade talks.

However, the import policies of industrial nations can be blamed only so much for the failure of African countries to diversify their export base. Asian countries are faced with similar protectionist policies and have been able to diversify to a large extent. This is because the Asian countries have taken full advantage of the fast growing markets of developing countries.

A.3.3 Long-Term Constraints on Growth

The World Bank (1986) has identified rapidly growing population, lack of human resources, lack of health and education services, lack of agricultural research, and rapid deforestation as the main long-term constraints on economic performance in SSA. One of the main factors preventing the region's resumption in per capita output growth has been the fast growing population. Table 4.1 compares the population growth rates in various developing regions of the world. Sub-Saharan Africa is the only developing region where population growth has accelerated between the periods 1965-80 and 1980-88 (from 2.7 percent to 3.2 percent). The World Bank (1989b) notes that:

> Had the region's population growth followed South Asia's or Latin America's declining trend since the early 1970s, per capita income might have been 10 percent higher than they actually are, assuming the same growth in GDP, (p. 25).

Ever increasing population growth rates in SSA have imposed severe constraints on development prospects of countries in the region. High population growth rates are taking their toll on land quality in two important ways:

- First, the rapidly growing population has forced many African farmers to shorten the fallow periods -- a period where the land is abandoned and given time to build up the lost nutrients -- hence preventing regeneration of mature vegetation and causing loss of soil fertility and soil degradation (World Resources Institute 1990, p. 90).
- Second, rapidly growing population has contributed to a rapid depletion of fuelwood supplies, deforestation and desertification. As fuelwood supplies become scarcer, farmers have to burn animal dung and crop residues instead of using them to enrich and sustain the soil (World Resources Institute 1990, p. 90). Higher population growth rates and retrenchments in central government budgets imply that more people rely on the same (or declining) number of hospitals, doctors, schools and teachers.

A.3.4 Weather Factor

Severe droughts have been detrimental to agricultural production in many countries in SSA. For instance, severe cyclical droughts and the great droughts of 1968-73 and 1982-83 in the Sahel (Cape Verde, Chad, Djibouti, Ethiopia, Gambia, Mali, Mauritania, Niger, Senegal, Somalia, Sudan and Burkina Faso), the Horn of Africa (Ethiopia, Somalia and Djibouti) and other countries in the Western and Southern parts of Africa have taken their toll on food production. The result has been large-scale migration, devastation of living conditions, starvation and widespread deaths.

However, drought cannot be entirely blamed for massive starvation in the countries of SSA. Botswana faced a decade of drought in the 1980s and no case of starvation was reported. The government of Botswana committed itself to an active program of assistance, assisted by the skills of the private traders and retailers to protect the poor. Kenya faced a severe drought in the mid-1980s (as severe as the one that led to the great famine in Ethiopia.) The Kenyan government recognized the problem early and took bold steps to make the food deficits up with food grain imports.

A.3.5 Empirical Evidence

There is an acute dearth of empirical studies of the causes of the crisis in SSA. This dearth is even more pronounced for the "structuralist" view of the causes of the crisis. Recently there has been some effort to empirically identify the various causes of the crisis. However, the crisis in SSA is so deep and the data base for analysis so limited that more effort needs to be put into data gathering and analysis. The precious few studies which are available point to the importance of inappropriate domestic policies behind the sluggish growth and economic decline in SSA. Recently, a few empirical studies on SSA have provided evidence on the roles of two sets of factors in explaining the poor economic performance in a number of countries in the region [Akiyama and Larson (1991), Elbadawi (1992a), Ghura and Grennes (1991), Jaegar (1991) and Svedberg (1991)].

The study by Akiyama and Larson finds that the decline in export agriculture in SSA has been caused by overvalued real exchange rates, low producer prices and technological stagnation. For instance, they find that "In general, real producer prices for coffee, cocoa, and cotton in SSA were considerably lower in the mid-1980s compared with their level in the early 1970s and compared with those of the major competitors outside SSA, (p. 22)." Figure 4.1 confirms that the real effective exchange rate of SSA was highly overvalued in the mid-1970s to the early 1980s. Also, Figure 4.2 indicates that by-and-large the export volume in SSA has been adversely affected by overvaluations of the real exchange rate. For instance, between the mid-1970s to early 1980s when the real exchange rate was appreciating in SSA, the general trend in the export volume was a negative one. The export volume reached its lowest value in 1982 when the real exchange rate was the most appreciated. After 1982 when the real effective exchange rate was depreciating at a rapid rate, the rapid fall in export volume was reserved with a slow recovery.

The study by Ghura and Grennes investigates the impact of real exchange rate misalignment on economic growth, total and agricultural exports, total imports, saving and investment in SSA. The real exchange rate, the relative price of tradables to non-tradables, is viewed as an important variable in determining economic performance, since it reflects the overall state of not only macroeconomic, exchange rate and trade policies, but also of economic fundamentals such as the terms-of-trade and capital inflows. Indexes of the real exchange rate misalignment are constructed for 33 countries in

SSA based on a formal model of the determination for the real exchange rate. The statistical analysis provides evidence that countries which have pursued judicious macroeconomic, exchange rate and trade policies (thus maintaining the actual real exchange rate close to its equilibrium level) have experienced better economic performance.

The econometric investigation by Jaegar confirms that the deterioration of export agriculture in SSA during the 1970s and 1980s was associated with high levels of high direct and indirect taxation (through government controls and overvalued exchange rates). Krueger, Schiff and Valdes (1988) have provided empirical evidence that the negative impact of indirect taxes (from overvalued real exchange rates) on producer incentives in agriculture has been much stronger than the effect of direct agricultural taxes. Elbadawi (1992a) confirms this for the case of the Sudan (an African country with a large agricultural economy) and also provides econometric evidence confirming the predictions of endogenous growth models (e.g. Easterly 1990) which allows policy distortions to have adverse effects on growth. Furthermore, the agricultural growth model estimated by Elbadawi shows highly significant and harmful effects on agricultural growth from real exchange rate overvaluation and shows only marginally significant effects from international terms-of-trade shocks.

Other studies have also pointed to the importance of inappropriate domestic policies in explaining the poor economic performance in SSA. For instance, a recent World Bank/UNDP study finds that "Africa's crisis cannot be satisfactorily explained as the result of an adverse international economic climate, low commodity prices, or dwindling foreign assistance, World Bank/UNDP 1989a, p. 2." Also, in a study on Tanzania, Sharpley (1985) notes that "External factors beyond the control of the authorities do not seem to have been the main reason for Tanzania's deteriorating foreign exchange position, and falling prices on world markets were not the main cause of Tanzania's declining real export earnings, p. 74." In addition, in a recent report on Africa, the ADB notes that "...the declining export volumes [in Africa] are to a large extent the outcome of trade policies that have discriminated against the production of tradable goods in general and exports in particular, p. 92."

Proponents of the "external" causes of the African crisis point to the ever-declining terms-of-trade for African commodities as the main factor behind the poor economic performance in SSA. It is claimed that declining terms-of-trade have wiped out potential benefits from increased production. However, empirical investigation by Svedberg (1991) finds that this is not necessarily the case. Svedberg investigates the role of terms-of-trade losses versus losses in export volume in explaining the poor performance of export earnings in SSA for the period 1954-85. It is found that although most countries in the region suffered a significant decline in export revenues in the period 1970-85, the main cause of the decline was the falling export volume and not the declining terms-of-trade. In fact, in an earlier period, 1954-69, although the terms-of-trade were not more favorable (than in the

latter period) in the region, export revenues experienced significant growth due mainly to increases in export volumes. Svedberg notes that real world market prices for most primary products (even for countries outside Africa) have declined and fluctuated considerably. Most countries in other parts of the world (including Asia) have successfully diversified their export base, whereas in most countries in SSA, the export structure has remained the same since independence.

The results from Svedberg's study confirm a similar finding of the Berg Report World Bank (1981), that "The main cause of rising current account deficits and shortages of foreign exchange in the 1970s was not the terms-of-trade, but the slow growth of exports; of the 29 countries for which information is available, 24 recorded a lower rate of export growth during the 1970s than in the previous decade, and 19 had negative rates of export growth, compared with only one during the 1960s p. 19)."

Also, a comparison of the terms-of-trade for SSA with those for Asia and LDCs in general does not indicate a much different trend for the terms-of-trade for SSA (Figure 4.3). In fact, although, the terms-of-trade for SSA witnessed an ever declining trend since 1980, it was still about 34 percent higher in 1989 than its low level in 1967. Furthermore, although other developing regions of the world experienced a deterioration in their terms-of-trade in the 1980s, their export volume still grew at a rapid rate (Tables 3.2a and 3.2c, and Figure 3.4).

The overall terms-of-trade picture conceals some important facts about individual commodity price performance. Countries in SSA typically produce and export one or two major (agricultural and mineral) commodities. World prices for most of these commodities have fluctuated widely and in the late 1980s were at historically depressed levels. Three commodities of which Africa is a major exporter (coffee, cocoa, and copper) were severely depressed over the whole decade of the 1980s. Their real prices were down in the 1980s from their levels in the 1950s by 40, 38 and 34 percents. In 1989, coffee prices were at a 14-year low. The coffee price reached its lowest level in real terms after the collapse of the coffee agreement in 1989. Similarly, after the failure of the international cocoa organization in 1989 on a new price support measure, real price fell to the level of 1945. Also, another four commodities (cotton, tea, sugar and tobacco) exported on a fairly large scale by certain countries saw their prices plummet in the 1980s. Their real prices were down in the 1980s from their levels in the 1950s by 53, 59, 33 and 25 percent. The real price of sugar dropped by almost 100 percent in the 1980s from its level in the 1970s.

In addition to the study by Elbadawi discussed above, only one study (by Wheeler 1984) could be identified which investigates the relative importance of both the external factors and domestic policies in explaining growth in SSA. In an investigation of the influence of internal and external shocks and policy failures on growth in SSA in the period 1970-80, Wheeler used an eight variable regression analysis for a set of twenty-five African countries. He classified the variables into a set of

environmental variables (terms-of-trade, share of non-oil minerals in exports in 1979, export diversification, and violence) and policy variables (real effective exchange rate, import allocation regime for consumer and capital goods separately, and sustainability of balance in trade accounts). He found that " ... the environmental variables seem to have had more impact on growth as a group than the policy variables ... (p. 1)." However, Wheeler made several qualifications in interpreting his results. For instance, data on (other) policy variables relating to agriculture, industry and the various factor markets were not available.

APPENDIX B: NEED AND RATIONALE FOR ADJUSTMENT LENDING

In most countries undergoing adjustment programs, policy reforms are addressed in several key areas of the economy: The World Bank (1991a) has identified eight areas where intensive reforms have taken place in SSA: (a) fiscal management; (b) exchange rate; (c) external trade; (d) agricultural price and marketing; (e) financial sector; (f) civil service; (g) public enterprise; and (i) domestic trade. There have been varying degrees of success with policy reforms in SSA. The World Bank (1988a) notes that substantial progress has been made in (a) exchange rate flexibility and export incentives, (b) progress in replacement of quantitative restrictions by tariffs, and (c) agricultural policy reforms. However, success with import liberalization and institutional reforms has been much slower.

Following the earlier discussion of section 4, the remainder of this appendix describes the extent of and rationale for policy reforms both at the macroeconomy-wide and the sectoral levels and for support of institutional reforms.

B.1 Macroeconomic Reform

Stabilization measures include the traditional monetary, fiscal and exchange rate policies in an attempt to restore external (current account) and internal (unemployment) balance, as well as to control inflation (Corbo and Fischer 1991, p. 5). They are a prerequisite for efficient growth. Fiscal policy reforms have been a key component of overall macroeconomic reforms in SSA. Adjustment programs in SSA have concentrated heavily on the correction of macroeconomic imbalances. Hettige et al. (1991) note that "The proportion of policy measures dealing with macroeconomic issues in Bank-supported programs has been higher (26 percent) in Sub-Saharan Africa than in other regions (21 percent). Contractionary fiscal and monetary policies have been implemented in order to reduce aggregate demand and hence to bring expenditures more in line with available resources and restore macroeconomic stability. In general, adjustment programs in SSA have placed much more emphasis on correcting macroeconomic imbalances than in other regions.

The presence of widespread macroeconomic instability and the pressing need for macroeconomic policy reforms in many countries of SSA in the early 1980s, were evidenced by the presence of widespread parallel market activities. For instance, the share of the parallel market activities was about one third in Ghana in 1982 and above 60 percent in Sudan for most of the 1980s (World Bank, 1990a, p. 46). Also, it was not uncommon in countries such as Ghana, Guinea, Mozambique, Tanzania and Uganda for the black market rate of exchange to be several times above the official exchange rate in the 1980s. Parallel markets are symptomatic of fundamental macroeconomic mismanagement. For instance, a surge in the premium for foreign exchange may be indicative of unsustainable fiscal deficits leading to higher inflation rates in the country concerned

(than in the major trading partners) most often causing the real exchange rate to become overvalued. The implicit taxation imposed on exportable goods by an overvaluation of the real exchange rate gives rise to black market activities in exports -- for example, underinvoicing of exports and outright smuggling. Such illegal activities lead to reductions in the government export tax revenues. Parallel markets are usually very efficient in that agents in that market adjust their price expectations very rapidly with changes in macroeconomic and exchange policies or in perceived changes in such policies. Hence, such markets are usually a good guide for investors, farmers and other economic agents for the credibility of economic policy reforms (Elbadawi 1991b).

The successful stabilization of the macroeconomy is an important step in the subsequent success of the other phases of policy reform programs for two main reasons:

- First, runaway public deficits which fuel inflation have to be controlled, because growing inflation is an important source of relative price distortions at the sectoral levels.
- Second, the commitment of a government to stick to a firm stabilization program provides an important signal to farmers, businessmen and other economic agents about the credibility of the announced commitments to reform the price structures at the sectoral level. Corbo and Fischer (1991) note that "Reforms that start with low credibility about their sustainability may temporarily get current relative prices right, but consumers and producers perceive that the reforms will not last and intertemporal relative prices are accordingly distorted, (p. 3)."

Also, stabilization programs aimed at inducing macroeconomic stability are crucial for the success of several other components of adjustment programs. For instance, trade reforms require real devaluation of the currency in response to the effects of reductions in tariff and non-tariff barriers. In an environment of growing inflation (induced by expansionary fiscal policy) the real exchange rate becomes overvalued leading to the reduction of exports and to the decline in foreign exchange revenues. This could in turn lead to a reversal of progress made on tariff reforms as the supply of foreign exchange dwindles.

The World Bank (1991c) has noted that macroeconomic stability must be a top priority in the development process since the experience of the 1970s and 1980s indicates that such stability is crucial for durable and sustainable economic growth. Sound macroeconomic policies create an environment which is hospitable for private investment and the development of entrepreneurship. Such an environment also helps to promote productivity. Given the importance of macroeconomic stability for the success of policy reforms in other areas and sectors, the World Bank constantly

monitors macroeconomic indicators such as public deficits, inflation rate, interest rate on bank deposits, and real exchange rates. In most cases rapid progress in the implementation of macroeconomic policies is a prerequisite for the release of second tranche.

B.2 Exchange Rate Reform

Exchange rate devaluation has been a very important component of most adjustment packages in SSA. There has been tremendous progress made in exchange rate adjustment. In the late 1970s and early 1980s, most countries in SSA had overvalued effective real exchange rates compared to other developing regions (Figure 4.1). Between 1980-82 and 1987, the index of real effective exchange rate had depreciated by about 40 percent for SSA as a group. Also, between 1987 and 1990, the real effective exchange rate had depreciated by another 14 percent. Countries with a flexible and market-oriented exchange rate regime (such as Gambia, Ghana, Guinea and Madagascar) have been very successful at keeping the degree of overvaluation in their real exchange rates at low levels in the late 1980s (World Bank 1991a, p. 9).

The rationale for nominal devaluation is simple. For a given set of fiscal and monetary policies and economic fundamentals, a nominal devaluation accelerates the process of real exchange rate convergence towards its equilibrium level. Evidence obtained by Edwards (1989) indicates that nominal exchange rate devaluation is a very powerful tool in inducing a depreciation in the real exchange rate. An overvaluation of the real exchange rate imposes an implicit tax on exports and hence discourages the production of exportable goods. It also sets an implicit subsidy on imports and hence encourages the latter, worsening the current account balance. Hence, nominal devaluation is a very powerful tool in bringing about an improvement in the current account balance.

B.3 Trade Reform

In SSA, a development strategy of industrialization and import-substitution in the 1960s and 1970s led to the establishment of high import tariffs on competing imports to protect infant industries. Inward-oriented trade policies affect production incentives in several ways:

- High import tariffs and policies that protect the industry raise the cost of imported inputs such as fertilizer, machines, tractors and spare parts. This in turn lowers the profitability of the exportables sector.
- Export taxes lower domestic prices relative to international prices and hence reduce the incentives for producing exportable goods.

- Excessive inward-oriented trade strategies cause overvaluation of the real exchange rate and the resulting implicit taxation on exports lower incentives to produce exportable goods.
- The existence of quantitative restrictions (such as quotas), and import and export licenses create opportunities for rents and can divert resources from production activities to rent-seeking activities. Gallagher (1991) has shown that the existence of widespread rent-seeking activities in SSA in the 1970s and 1980s has slowed down economic growth in the region.

Trade reforms involve the elimination of quantitative import restrictions or the replacement of such restrictions with tariffs; the reduction of very high import tariff rates; the replacement of cascaded tariff structures with more uniform tariff rates; and the reduction of excessive export taxes. The primary aim of trade reforms is to induce a shift in resources (investment and labor) from the production of non-tradable goods and inefficient import-competing activities to the production of tradable goods and efficient import-substitution activities.

However, trade reforms in SSA can meet with difficulties for the following reasons:

- Most African countries depend on a few (usually one or two) agricultural commodities for their export revenues. Large declines in international commodity prices reduce foreign exchange earnings. If such reductions are drastic, and difficulties are involved in paying for imports, governments can reverse the magnitude of the tariffs to their pre-reform high levels and/or reinstall quantitative import restrictions.
- In many countries vested interests in governments resist efforts to reduce protection for protected import-competing industries.
- Government administrators of quantitative trade restrictions may reap rents from such restrictions and hence may resist reform.

The supply response from trade policy reforms can be enhanced in the following ways:

- The announced trade policy reforms must be made credible by bold government moves to implement the reforms and by complementary institutional reforms to support the new trade regime.
- Complementary reforms (in exchange rate, financial sector, labor market, and agricultural prices) should be carried out simultaneously to induce a quick mobilization of resources to the tradables sector.

Empirical studies indicate a strong and positive correlation between outward-oriented trade strategies and rapid economic growth. The 1991 World Development Report finds that "... there is a positive association between productivity growth and trade and exchange rate policy using seven different measures of openness (World Bank 1991c, p. 98)." Hence, given the fact that African economies are highly dependent on foreign trade, trade reforms have the potential of inducing large benefits for them.

B.4 Agricultural Sector Reform

The macroeconomic crisis in SSA has been very closely related to the poor performance in agriculture. The agricultural sector remains the backbone of most countries in the region. It employs a large part of the labor force and it accounts for a high proportion of exports. However, agriculture has been neglected in many countries. Since, the early 1980s it has become clear that the first step to economic recovery in SSA is to build up and strengthen the agricultural sector.

Given the importance of the agricultural sector in SSA, about half of all SECALs has been geared to that sector in the period 1980-90. Agricultural conditions have been included in a large number of SALs and other non-agricultural SECALs. In many countries (such as Guinea, Malawi, Mali, Niger, Nigeria, Somalia and Zaire) efforts have been made to liberalize the marketing and pricing of agricultural export commodities. Also, tremendous progress has been made in changing agricultural policies and reforming the agricultural institutional framework in Cote d'Ivoire, Ghana, Kenya, Madagascar, Mauritania and Togo.

The idea underlying policy reforms in agriculture is very simple. Once the major relative prices (including the real exchange rate and real interest rates) achieve the "right" level, farmers and other economic agents are expected to respond significantly to the improved economic environment. They do so by mobilizing scarce resources into productive agricultural activities and hence help trigger and speed up the agricultural growth process. However, there is some controversy in the supply response literature concerning the magnitude and speed of responsiveness of agricultural output to price incentives. There are those who believe that agricultural output is rather price inelastic and hence does not respond much to price incentives. Many of these same observers believe that there are structural impediments (such as weak supporting institutions and infrastructure) constraining supply response to price incentives. Thus, taxing agriculture either through lower agricultural prices or overvalued real exchange rates should not lower agricultural output. However, there are those who believe that the aggregate supply elasticity for agriculture is fairly elastic. Hence, direct and indirect taxation of agriculture is a direct taxation on long-run economic growth.

According to a survey on agricultural supply response by Chhibber (1989), estimates of aggregate supply elasticities fall in a wide range. The estimates from the cross-country and general

equilibrium models range between 0.9 and 1.66 indicating that agricultural output is not necessarily price inelastic and hence correct price signals can trigger favorable aggregate agricultural supply response. Cottani et al. (1990) and Ghura and Grennes (1991) have shown that implicit taxation of the agricultural sector through overvalued real exchange rates does indeed slow down agricultural and overall growth. Such a finding seems to imply that agriculture is indeed price elastic. The available low estimates of aggregate agricultural supply elasticities might be a reflection of econometric and data problems. The "distributed lag" approach to measuring agricultural price elasticities is a partial equilibrium approach and does not account for factor movements induced by changes in relative prices (Valdes (1986), p. 161). A study on Argentina using a general equilibrium framework (by Cavallo and Mundlak 1982) finds agriculture to be quite responsive to changes in price -- an implied elasticity of 0.9 is obtained. Also, Balassa (1990) found a price elasticity of 1.35 for agricultural exports in SSA.

Thomas and Chhibber (1989) have argued that improved price incentives will enhance agricultural supply response only if the fundamental bottlenecks in agriculture are eliminated and if non-price measures are taken. Hence, agricultural price reforms need to be complemented by:

- technological innovations which provide high-yielding seed varieties, for instance;
- investments in infrastructure such as feeder roads and irrigation and flood control systems;
- improved availability of inputs such as seeds, fertilizer and equipment;
- increased availability of agricultural research and extension;
- increased availability of credit and marketing services; and
- reforms of the institutional and regulatory frameworks.

Given the importance of the agricultural sector in SSA, the benefits from an improved policy environment has the potential of generating large benefits for the overall economy.

B.5 Financial Sector Reform

In the context of SSA, much less emphasis has been put on the financial sector reform (compared with other parts of the world). However, financial sector reforms have grown in importance over time in SSA. Only 5 percent of the adjustment programs constituted financial-sector specific reforms in the period 1980-85. This share rose to 8 percent in the period 1986-87 and to 11 percent in the period 1988-90 (Hettige et al. 1991, p. 16).

A dynamic financial sector and an efficient financial intermediation are important characteristics of fast growing developing economies (such as Korea, Singapore and Malaysia). The

smooth functioning of the financial sector is an important precondition for the success of adjustment programs. Casual observation suggests that countries with "deeper" financial sectors (measured by M2/GNP) have adjusted to the severe external shocks of the early 1980s faster and grown more rapidly than those with "shallow" financial sectors. The financial system performs certain important functions in the development process of a nation. It serves as an intermediary between savings and borrowers of these saved resources. Also, an efficient financial system reduces both costs and risks associated with lending activities.

However, the financial sector in SSA has remained small, underdeveloped and inadequate for the development needs of the real sector for the following reasons:

- For a long period of time, governments considered it important to promote economic development by controlling interest rates, providing subsidized credit to (perceived) priority sectors, and securing scarce inexpensive funding for their own activities (World Bank 1989c, p. 1). Commercial banks and other financial intermediaries were pressured by governments to make loans to priority sectors such as import-substitution industries at (low) interest rates. Also, low interest rates paid to depositors did not encourage savings.
- Most of the few existing formal financial institutions have been concentrated in the urban areas and hence credit availability has been scarce in the rural areas.
- Since lenders have provided loans mainly to wealthier enterprises, small firms have encountered tremendous difficulty in obtaining funds for the financing of small businesses.
- In many countries public borrowing from the central bank (often) financed by money creation has fueled expected inflation which in turn has caused the real interest rates on deposits to become negative. For most of the period between 1967-85, the real interest rates in SSA were negative and much lower than most other developing regions (World Bank 1989c, p 65). Negative real interest rates discourage the holding of financial assets as savers find it more rewarding to invest in real assets or to transfer funds abroad.

With the drying up of foreign capital inflows in SSA in the 1980s, countries in the region will have to depend more on domestic resources to finance investment and development. Hence, financial sector reforms are important since they aim to improve the efficiency of financial intermediation and the use of credit resources, including the allocation of investment (Corbo and Fischer 1991, p. 13). Reforms of the financial sector involve attempts to allow the private sector and

market forces determine the allocation of limited and scarce financial resources. In this context, the banking system is encouraged to remove subsidies and controls in order to allow domestic interest rates to reflect market conditions more closely.

Two factors are crucial for financial sector reform:

- First, overall price stability is important for the successful development of financial markets because of the linkages between expected inflation and the real interest rates. Hence, financial liberalization needs to be coupled with macroeconomic policy reforms and price stability. Experience suggests that countries that attempted financial liberalization before undertaking other reforms have suffered destabilizing capital flows, high interest rates, and corporate distress (World Bank 1989c, p. 5). In countries that have maintained low and stable inflation through prudent monetary and fiscal policies, financial sector growth has been rapid, even where interest rates were (moderately) regulated (World Bank 1989c, p. 64).
- Second, there needs to be a suitable institutional framework and accountability system to help in the development of the financial sector. In many African countries, the legal, accounting and auditing systems have to be overhauled to define and enforce laws concerning property rights, contracts, collateral and foreclosure. Countries also need to create appropriate financial institutions, develop better systems of prudential regulation and supervision, improve the flow of financial information, develop human skills for managing complex financial operations (World Bank 1989c, p. 5).

B.6 Public Enterprise Reform

Public enterprise reform has been an important component of recent SECALs in SSA (World Bank 1990a, p. 42). At the time the adjustment process was initiated, many countries in SSA had either overextended public enterprise sectors (Ghana, Madagascar, Mauritania, and Zambia) or public infrastructural development commitments (Cote d'Ivoire, Kenya, Nigeria, and Togo) programs that weighed heavily on the government budget (Hettige et al. 1991, p. 1). Consequently, public sector reforms have received much emphasis in SSA -- more than in other regions.

Public sector reforms include the following measures:

- inducing curtailment of overextended public sectors and overhaul of loss making parastatals (e.g. marketing boards) since they add to the budget deficits;
- increasing the efficiency and profitability of state-owned enterprises by restructuring incentives for managers;

- allowing competition from private (including foreign) firms -- such as in Ghana, Kenya and Malawi;
- encouraging and allowing the private sector to perform activities it does best (e.g. marketing of agricultural commodities) and allowing the state to focus on managing the macroeconomy and at providing basic educational, scientific and health services and providing infrastructure; and
- enabling more adequate pricing of state enterprise output -- prices of tradable goods should reflect international prices and prices of non-traded goods of public enterprises (e.g electricity) should reflect social marginal costs.

The ultimate objectives of economic policy reform programs are to promote economic growth and raise the welfare of the poor. By sending the appropriate price signals to reflect the relative scarcity of capital, policy reforms encourage the use of more labor-intensive production techniques which provide work for the poor. Policies that improve the efficiency and internal terms-of-trade for agriculture can improve the income of the poor. Efforts towards economic policy reforms in SSA need to be complemented by institution building and human capital development. Institutions need to be strengthened so that they can be more effective in responding to the needs of producers, traders and consumers. The provision of social services (especially primary education, nutrition and basic health care, and family planning) to the poor is important to help enhance the productivity of labor.

There is no doubt that many countries in SSA have been the victim of forces outside their control -- declining terms-of-trade, drying up of foreign capital inflows, prolonged periods of droughts and the accompanying ravage on soil quality and soil erosion. However, empirical studies suggest that inappropriate domestic policies (over-expansionary monetary and fiscal policies, excessive inward-oriented trade strategies and policies encouraging excessive capital inflows) have been very important in slowing down macroeconomic and sectoral performance in SSA. Hence, domestic policy reforms can stimulate the engine of growth in these economies. Policy reforms in general, and policies designed to maintain the real exchange rate near its equilibrium level, in particular, can provide considerable stimulus to the recovery of growth, saving, investment, and trade. Given the importance of the agricultural sector in most African economies, the improvement of agricultural price incentives offers the potential of large benefits.

APPENDIX C: OVERVIEW OF THE DATA

The data used in the analysis are taken from the World Bank's ANDREX data base, except for the real effective exchange rate data which come from the IMF. Five indicators of performance are considered: rate of growth of real GDP; ratio of saving to GDP; ratio of investment to GDP; ratio of export to GDP; and domestic inflation. The sample contains observations from 45 low income countries during the period 1970-89, a period for which data were available for all relevant macroeconomic variables when the study was started (see Table A.1 for a list of countries included in the study). Following Corbo and Rojas (1991), the performance indicators in the period 1985-89 [18] (a period after adjustment was initiated) are compared with those in 1981-84 (the decision period) for countries in SSA and low-income countries (LICs).[19] Each of these two groups of countries were divided into three categories: early intensive adjustment lending (EIAL) countries that received two or more SALs or three or more adjustment loans (SALs or SECALs), starting in 1985 or before; other adjustment lending (OAL) countries that started a program after 1985 or received fewer than two SALs or fewer than three adjustment loans in 1985 or before; and non adjustment lending (NAL) countries that did not receive adjustment loans.

Both constant and current series were used. Most EIAL countries carried out a real depreciation in 1985-89. Thus, the relative price of investment goods and exports rose relative to the early 1980s. Therefore, to measure the contribution of growth in the supply response of exports, it is better to work with GDP and export to GDP ratios in constant prices. For completeness and to satisfy the adding up condition, the savings ratios at constant prices were also used. In the empirical analysis two categories of countries were defined: (i) program countries consisting of the EIAL countries; and (ii) a "control" group consisting of the non-program (OAL and NAL) countries. The OAL countries were considered non-program countries because they received too few adjustment loans during the period analyzed.

The time period was divided as follows: 1970-80 (first), 1981-84 (second) and 1985-89 (third), with the latter corresponding to the adjustment period. A comparison was made of the program countries' performance in the third period with respect to some counterfactual scenario of what would have happened in the absence of an adjustment program. Simple period averages of the

---

[18] It is argued that the period 1985-89 (or 1986-89) is the appropriate period to assess the effect of structural adjustment programs on economic performance. Examination of performance indicators one or two years after the initiation of an adjustment effort reveals little about the effectiveness of an adjustment program, since the first phase of reform will be dominated by the stabilization effort needed for establishing a credible macroeconomic environment, before structural reforms to improve resource allocation and restore growth can be started (see Corbo and Rojas 1991).

[19] The LICs are normally defined to be the group eligible for the World Bank IDA lending. In addition to these countries, we include six middle income countries for SSA: Botswana, Cameroon, Congo, Cote d'Ivoire, Mauritius and Zimbabwe to the group of LICs.

following five indicators were used: rate of GDP growth, inflation and the ratios of gross domestic savings, gross investment and exports to GDP. Thus, for each country j, there is an observation for variable i in periods one, two and three.

Following is a list of variables used in the analysis:[20]

Five Indicators

GDP_	Rate of real GDP growth
GDI_	Gross investment to GDP ratio
GDS_	Gross domestic saving to GDP ratio
X_	Export to GDP ratio
INFL_	CPI inflation

Others

INT_	Internal shock[21]
EXT_	External shock
CAB_	Current account balance to GDP ratio
DEBT_	Total debt to GDP ratio
REER_	Real effective exchange rate
TOT_	Terms of trade

Dummy Variables

AFR	1 if country is African, 0 otherwise
LAC	1 if country is Latin American, 0 otherwise
ASIA	1 if country is Asian, 0 otherwise
MIC	1 if country is middle-income, 0 otherwise
PROG	1 if country is was an early intensive adjustment country, 0 otherwise

[20] The numbers correspond to the period. For example, GDP2 is the rate of growth of real GDP in period 2, and DEBT21 is the change in external debt between periods two and one.

[21] The internal shock variable was constructed by regressing cereal yield on a time trend and multiplying the predicted yield by the share of agriculture in GDP.

Table A.1: Country Classification

I.	EIAL (Early Intensive-Adjustment-Lending Countries) (14)	
	Bolivia	Mauritius
	Cote D'Ivoire	Nigeria
	Ghana	Pakistan
	Kenya	Senegal
	Madagascar	Tanzania
	Malawi	Togo
	Mauritania	Zambia
II.	OAL (Other Adjustment-Lending Countries) (16)	
	Bangladesh	Guyana
	Burkina Faso	Mali
	Burundi	Niger
	Central African Republic	Sierra Leone
	China, People's Republic of	Somalia
	Congo, People's Republic of	Sudan
	Guinea	Zaire
	Guinea-Bissau	Zimbabwe
III.	NAL (Non-Adjustment-Lending Countries) (11)	
	Benin	Liberia
	Botswana	Myanmar
	Cameroon	Rwanda
	Ethiopia	Sri Lanka
	Haiti	Yemen Arab Rep.
	India	

Notes:
EIAL are countries that have received 2 SALs or 3 adjustment Operation or more, with the first adjustment operation in 1985 or before.
OAL are other countries receiving adjustment lending.
NAL are countries that did not receive AL in the period 1980 to 1988.
The sample includes Sub-Saharan African countries and other Low income countries. The control group in the Modified-Control-Group method includes EIAL countries.

APPENDIX D: THE STATISTICAL FRAMEWORK

An adequate framework for estimating the marginal contribution of the program effect should adjust for initial conditions and exogenous non-program factors. In addition, the methodology must explicitly consider policy reactions and hence the endogeneity of policy instruments. More importantly, this methodology should allow for correction of the "sample selectivity" bias that results from the non-randomness of the decision to undertake reform.

The problem of selectivity bias arises in evaluating the impact of economic reform on average economic performance (e.g., growth in real GDP), when the average performance of the program countries would differ from that of the non-program countries even in the absence of program. Formally, if y_{it}^{*} stands for economic performance of country i at period t in the absence of program, and if d_i is an indicator variable equal to one if i is a program country and equal to zero otherwise; then selectivity bias implies the following:

$$E(y_{it}^{*} \mid d_i = 1) \neq E(y_{it}^{*} \mid d_i = 0) .$$

The above interpretation of the selection bias problem borrows from the literature on the impact of social programs.[22] The strand of the literature that exploits non-experimental data (as in the present case) has produced rather non-uniform predictions regarding the effectiveness of social programs. In a recent paper analyzing the effectiveness of training programs, Heckman and Hotz (1989) argue that "evidence of striking differences in estimates produced from alternative non-experimental estimators merely confirms the existence of systemic differences between trainees and comparison group members in characteristics affecting outcome measures." Also, the different non-experimental estimators make different assumptions about the distribution of these differences. Based on this, Heckman and Hotz (1989) then go on to develop a family of models that resolve the selection bias problem under varying identification conditions. They also develop formal tests for choosing among alternative non-experimental estimators, subject to data availability.

In what follows the Heckman and Hotz (1989) paradigm will be used to develop two types of estimators that permit identification of program effect under two different sets of assumptions. The current model also draws on Rojas and Serven (forthcoming) which incorporates a policy reaction function in the standard selection bias problem studied in the social program literature.

---

[22] For example Heckman and Hotz (1989) and the literature cited therein.

As a starting point the basic specification for the macro economic target variable are stated in equation (1) below.

$$y_{is} = \alpha_0 + X'_{is}\,\alpha_1 + W'_{is}\,\alpha_2 + v_i + e_{is} \qquad s \le \kappa \tag{1A}$$

$$y_{it} = \alpha_0 + X'_{it}\alpha_1 + W'_{it}\alpha_2 + \alpha_3 d_i + v_i + e_{it} \qquad t > \kappa \tag{1B}$$

where κ is the decision period pertaining to program participation X_{it} is a κ -element vector of the macroeconomic policy instruments that would be observed by country i in period t under the circumstances of non-participation posture, W_{it} is an M-element random vector of the world variables not related to program participation and relevant to country i and period t, d_i is a dummy variable that takes the value of unity if the country participates in the Bank-supported reform and zero otherwise, the prime (') sign denotes the transpose of a vector, v_i is a time invariant country specific random effect, and e_{it} is an iid disturbance shock uncorrelated across time and across individual countries.

In equation (1), the target variable y_{it} is a function of (a) the value of the selected policy instruments that would have occurred assuming non-participation (a counterfactual), X_{it}; (b) a change in selected world economic conditions, W_{it}; (c) the total effects of program participation, d_i; and (d) a range of unobservable random shocks, v_i and e_{it}.

The policy vector x is generated according to the following reaction function:

$$\Delta X_{it} = [Y^d_{it} - Y_{i,t-1}]' \,\delta_1 + W'_{it}\,\delta_2 + n_i + \epsilon_{it} \tag{2}$$

where Y^d_{it} is the desired value of the matrix Y_{it} of the individual economic indicators, y_{it}, s; and n_i and ϵ_{it} are random effects as in (1) above. Following Rojas and Serven (forthcoming), e_{it} and ϵ_{is} are allowed to have a non-zero correlation for i = j and t = s, but are assumed uncorrelated in all other cases. In turn, v_i and n_i, can be correlated for any given i.

The reaction function (2) reflects policy makers' response to perceived disequilibria in the target variables. It shows that a change in policy instruments between any two periods is a function of the difference between the desired value of the target variable in the current period and its actual value in the preceding period, a change in the world economic environment, a time invariant country specific

random shock n_i and a disturbance term ϵ_{it}. The vector of the coefficients of responsiveness to target disequilibria is δ. One potential limitation of this model is that the reaction function can be highly unstable and in the extreme case deriving the counterfactuals becomes insoluble problem (e.g., Goldstein and Montiel 1986).

Since Y_{it}^d is unobservable, it is assumed that the desired target levels depend on last period policy stance and actual target levels, in addition to current exogenous world environment. Hence, the reaction function can be written in the following unrestricted reduced form:

$$X_{it} = b_0 + W_{it}' b_1 + X_{i,t-1}' b_2 + Y_{i,t-1}' b_3 + n_i + \epsilon_{it} \tag{3}$$

The model is completed by adding a framework describing the decision by countries to undertake economic reform. The participation decision can be specified in terms of an index function framework. Let the index, IN_i be a function of both observed variables (Z_i) -- which may include all of the elements in the vector X_i -- and unobserved variables (μ_i), that is,

$$IN_i = f(Z_i) + \mu_i \tag{4}$$

where f(.) is an unspecified function of Z_i. Then the i^{th} country's program status is given by:

$$d_i = \begin{cases} 1 \text{ if and only if } IN_i > 0 \\ 0 \text{ otherwise} \end{cases} \tag{5}$$

Now abstracting from (4) and (5) for a moment, subtract (1A) from (1B) and use (3) to obtain the following estimating equation for program effect:

$$\begin{aligned} y_{it} - y_{is} &= (W_{it} - W_{is})'\beta_1 + (X_{i,t-1} - X_{i,s-1})'\beta_2 \\ &+ (Y_{i,t-1} - Y_{i,s-1})'\beta_3 + \beta_4 d_i \\ &+ (e_{it} - e_{is}) + \beta_5 (\epsilon_{it} - \epsilon_{is}) \end{aligned} \tag{6}$$

where as before $t > \kappa$ and $s < \kappa$ and κ is the decision period pertaining to program participation.

The above equation, which allows the elimination of the permanent random shocks v_i and η_i, provides the structure that will be combined with the sets of identification conditions in order to derive the two estimators of the program effect. Note that since t-1 > s, the presence of e_{is} and ϵ_{is} in (6) implies that the terms $(Y_{i,t-1} - Y_{i,s-1})$ and $(X_{i,t-1} - X_{i,s-1})$ are endogenous. This rather classical source of endogeneity should also be corrected for along with the one caused by the selection bias problem.

Before going on to discuss individual estimators, the following general assumption is made. The dependence between e_{it} and d_i arises because of the dependence between μ_i and e_{it}. More formally

$$E(e_{it}|d_i, X_{it}, W_{it}) \neq 0 \quad \text{and}$$

$$E(e_{it}|d_i, X_{it}, W_{it}, Z_i) \neq 0 \quad \text{but}$$

$$E(e_{it}|d_i, X_{it}, W_{it}, Z_i) = E(e_{it}|X_{it}, W_{it}, Z_i) \tag{7}$$

This case is referred to by Heckman and Hotz (1989) as "selection on unobservables".[23]

D.1 First Difference Estimator

This estimator is obtained by adding to equation (6) and assumption (7) the assumption that the conditional expectation of the difference in a pre- and post- program set of e_{it}'s does not depend on d_i. That is, it is assumed that the following condition holds:

$$E(e_{it} - e_{is}|d_i, \hat{X}_i, W_i) = 0 \tag{8A}$$

for all t, s, where t > k > s, and $\hat{X}_i$ is an instrumented vector of X_{it}'s.[24] For this model consistent estimates of the impact of program can be obtained by estimating equation (6) using 2SLS or IV methods with d_i and $(W_{it} - W_{is})$ taken as the exogenous regressors.

---

[23] The "selection on observables" case which is not very relevant to the problem at hand is not considered here. See Heckman and Hotz for more details on this.

[24] Specification (8A) can be motivated by assuming that selection occurs on the permanent component, v_i of the composite disturbance term $(v_i + e_{it})$ of equation (1), and e_{it} is a zero non-random component independent of e_{is} for t > k > s.

D.2 Modified-Control-Group Estimator

This approach requires an assumption giving specific functional specification to the program status in equation (4). In addition to equation (6) and condition (7) assume that:

$$f(Z_i) = Z_i\gamma$$

$$\mu_i \sim iid \text{ from the distribution } F(\tilde{\mu}_i) = Pr(\mu_i < \tilde{\mu}_i)$$

$$\text{and } E(\mu_i|Z_i) = 0 \tag{8B}$$

Now assumption (8B) allows us to write:

$$Pr(d_i = 1|Z_i) = E(d_i|Z_i) = 1 - F(-Z_i\gamma) \tag{8B'}$$

The probability statement (8B') provides a basis for estimating (using a probit model (e.g., Corbo and Rojas 1991),[25] an instrument $\hat{d}_i = 1 - F(-Z_i\hat{\gamma})$ for d_i. The second step is to estimate equation (6) using 2SLS or IV as in (A) above but with $\hat{d}_i$ (rather than d_i) and $(w_{it} - W_{it})$ taken as exogenous regressors.

Note that for the first difference estimator, the identification condition is an assumption about the moments of the performance equation's disturbance term. In this case, identification of marginal program effect is possible without the need to specify the decision rule. However, the estimator used in the Modified-Control-Group analysis requires specific functional and distributional specification of the program participation decision process, but the random disturbance shocks to performance are allowed to be more general. These two estimators should provide an opportunity for assessing the robustness of the results. In addition to testing for conventional endogeneity as suggested by the model, the validity of both assumptions using pre-program data is formally tested.

---

[25] See also Barnow et al. (1981), and Heckman (1979).

Table B.1. Modified Control-Group Estimates of Program Effects for Low Income Countries

(Constant Prices) 1985-89 Relative to 1981-84

	Dependent Variable				
	Change in GDP growth	Change in Investment/GDP	Change in Saving/GDP	Change in Exports/GDP	Change in Inflation
Regressors					
C	0.163	0.350	0.201	..	..
	(4.363)	(3.952)	(2.905)	..	..
GDP2	-1.011	-0.628	..	0.433	0.905
	(-8.642)	(-2.605)	..	(2.267)	(2.334)
GDI2	0.144	..	0.161	-0.067	-0.226
	(3.103)	..	(1.196)	(-1.077)	(-1.578)
GDS2	..	..	-0.206	-0.043	-0.058
	..	..	(-4.393)	(-1.428)	(-1.486)
X2	-0.085	-0.196	-0.089	0.070	..
	(-3.289)	(-3.714)	(-1.351)	(1.475)	..
INFL2	..	..	-0.027	..	0.257
	..	..	(-2.938)	..	(1.265)
DEF2	..	..	..	..	-0.482
	..	..	..	..	(-1.060)
REER2	-0.000	-0.001	..	0.000	-0.001
	(-1.308)	(-2.298)	..	(1.548)	(-1.799)
TOT2	-0.001	-0.002	-0.001	..	..
	(-3.443)	(-4.366)	(-2.851)	..	..
INT32	0.007	..	..	..	-0.125
	(1.627)	..	..	..	(-2.415)
EXT32	0.068	0.140	0.534	..	..
	(2.531)	(1.999)	(5.365)	..	..
POL86	-0.009	-0.011	-0.013	-0.008	0.016
	(-3.545)	(-1.292)	(-1.650)	(-2.148)	(1.586)
LAC	-0.033	..	..	..	0.125
	(4.405)	..	..	..	(0.813)
AFR	..	0.028	..	..	..
	..	(1.587)	..	..	..
MIC	..	..	0.028	..	..
	..	..	(0.887)	..	..
PROGHAT	0.001	-0.053	-0.017	0.026	0.026
	(0.110)	(-1.906) *	(-0.691)	(1.570) **	(0.383)

* Statistically significant at the 10% level

** Statistically significant at the 12% level

Table B.2. Modified Control-Group Estimates of Program Effects for Sub-Saharan Africa

(Constant Prices) 1985-89 relative to 1981-84

	Dependent Variable				
	Change in GDP growth	Change in Investment/GDP	Change in Saving/GDP	Change in Exports/GDP	Change in Inflation
Regressors					
C	0.192	0.319	0.269	..	..
	(5.492)	(3.907)	(3.514)	..	..
GDP2	-1.129	-0.745	-0.742	0.745	1.732
	(-9.739)	(-2.373)	(-1.402)	(2.217)	(2.299)
GDI2	0.194	-0.167	0.234	-0.066	-0.231
	(3.757)	(-1.387)	(1.461)	(-0.587)	(-1.647)
GDS2	0.042	..	-0.150	-0.071	-0.133
	(2.551)	..	(-2.293)	(-2.075)	(-2.191)
X2	-0.090	-0.118	..	..	..
	(-2.604)	(-1.643)	..	..	..
INFL2	..	-0.126	..	-0.057	0.337
	..	(-2.430)	..	(-1.002)	(1.750)
DEF2	..	-0.017	..	..	..
	..	(-1.213)	..	..	..
REER2	-0.000	..	..	0.000	-0.002
	(-1.420)	..	..	(0.866)	(-1.857)
TOT2	-0.001	-0.001	-0.001	0.000	..
	(-3.702)	(-2.990)	(-1.828)	(0.806)	..
INT32	0.011	0.016	..	..	-0.170
	(1.725)	(1.009)	..	..	(-2.786)
EXT32	0.108	0.108	0.600	-0.115	..
	(3.594)	(1.534)	(5.214)	(-1.495)	..
POL86	-0.013	-0.016	-0.030	-0.013	0.022
	(-3.819)	(-1.139)	(-3.059)	(-1.910)	(1.749)
MIC	-0.019	..	..	..	-0.072
	(-1.482)	..	..	..	(-1.353)
PROGHAT	-0.014	-0.084	-0.083	0.080	0.122
	(-0.830)	(-2.314) *	(-1.574) **	(2.459) *	(1.244) ***

* Statistically significant at the 5% level

** Statistically significant at the 12% level

*** Statistically significant at the 22% level

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS992	Regional Integration in Sub-Saharan Africa: Experience and Prospects	Faezeh Foroutan	October 1992	S. Fallon 37947
WPS993	An Economic Analysis of Capital Flight from Nigeria	S. Ibi Ajayi	October 1992	N. Lopez 34555
WPS994	Textiles and Apparel in NAFTA: A Case of Constrained Liberalization	Geoffrey Bannister Patrick Low	October 1992	A. Daruwala 33713
WPS995	Recent Experience with Commercial Bank Debt Reduction	Stijn Claessens Ishac Diwan Eduardo Fernandez-Arias	October 1992	Rose Vo 33722
WPS996	Strategic Management of Population Programs	Michael H. Bernhart	October 1992	O. Nadora 31091
WPS997	How Financial Liberalization in Indonesia Affected Firms' Capital Structure and Investment Decisions	John R. Harris Fabio Schiantarelli Miranda G. Siregar	October 1992	W. Pitayatonakarn 37664
WPS998	What Determines Demand for Freight Transport?	Esra Bennathan Julie Fraser Louis S. Thompson	October 1992	B. Gregory 33744
WPS999	Stopping Three Big Inflations (Argentina, Brazil, and Peru)	Miguel A. Kiguel Nissan Liviatan	October 1992	R. Luz 34303
WPS1000	World Bank Adjustment Lending and Economic Performance in Sub-Saharan Africa in the 1980s: A Comparison with other Low-Income Countries	Ibrahim A. Elbadawi Dhaneshwar Ghura Gilbert Uwujaren	October 1992	A. Marañon 39074
WPS1001	World Bank Adjustment Lending and Economic Performance in Sub-Saharan Africa: A Comparison of Early Adjusters, Late Adjusters, and Nonadjusters	Ibrahim A. Elbadawi	October 1992	A. Marañon 39074
WPS1002	World Fossil Fuel Subsidies and Global Carbon Emissions	Bjorn Larsen Anwar Shah	October 1992	WDR Office 31393
WPS1003	Rent-Sharing in the Multi-Fibre Arrangement: Evidence from U.S.-Hong Kong Trade in Apparel	Kala Krishna Ling Hui Tan	October 1992	M. T. Sanchez 33731
WPS1004	Family Planning Programs in Sub-Saharan Africa: Case Studies from Ghana, Rwanda, and the Sudan	Regina McNamara Therese McGinn Donald Lauro John Ross	October 1992	O. Nadora 31091

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS977	Income Security for Old Age: Conceptual Background and Major	Estelle James	September 1992	D. Evans 37489
WPS978	How Restricting Carbon Dioxide and Methane Emissions Would Affect the Indian Economy	Charles R. Blitzer R. S. Eckaus Supriya Lahiri Alexander Meeraus	September 1992	WDR Office 31393
WPS979	Economic Growth and the Environment	Dennis Anderson	September 1992	WDR Office 31393
WPS980	The Environment: A New Challenge for GATT	Piritta Sorsa	September 1992	WDR Office 31393
WPS981	After Socialism and Dirigisme: Which Way?	Andrés Solimano	September 1992	S. Fallon 37947
WPS982	Microeconomics of Transformation in Poland: A Survey of State Enterprise Responses	Brian Pinto Marek Belka Stefan Krajewski	September 1992	S. Husain 37139
WPS983	Legal Reform for Hungary's Private Sector	Cheryl W. Gray Rebecca J. Hanson Michael Heller	October 1992	R. Martin 39065
WPS984	Barriers to Portfolio Investments in Emerging Stock Markets	Asli Demirgüç-Kunt Harry Huizinga	October 1992	W. Patrawimolpon 37664
WPS985	Regional Integration, Old and New	Jaime de Melo Claudio Montenegro Arvind Panagariya	October 1992	D. Ballantyne 37947
WPS986	The Administration of Road User Taxes in Developing Countries	Roy Bahl	October 1992	J. Francis-O'Connor 35205
WPS987	How the Epidemiological Transition Affects Health Policy Issues in Three Latin American Countries	Jose Luis Bobadilla Cristina de A. Possas	October 1992	O. Nadora 31091
WPS988	Economic Valuation and the Natural World	David Pearce	October 1992	WDR Office 31393
WPS989	The Indian Trade Regime	M. Ataman Aksoy	October 1992	R. Matenda 35055
WPS990	Protection and Industrial Structure in India	M. Ataman Aksoy Francois M. Ettori	October 1992	R. Matenda 35055
WPS991	Environmental Costs of Natural Resource Commodities: Magnitude and Incidence	Margaret E. Slade	October 1992	WDR Office 31393